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STAGES IN THE READING PROCESS OF BEGINNING READERS AS DETERMINED BY STUDENT'S USE OF ORTHOGRAPHIC AND CONTEXTUAL INFORMATION

by

© DOUGLAS WAYNE FLEMING

A THESIS

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IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Stages in the Reading Process of Beginning Readers as Determined by the Student's Use of Orthographic and Contextual Information" submitted by Douglas Wayne Fleming in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

This study was designed to investigate the possibility of using oral reading miscues during a single observation period to place beginning readers into hierarchial stages.

The forty children which constituted the sample were chosen from five grade one classrooms within the Edmonton Separate School System. The sample was limited to children who scored within one standard-deviation of the mean on the Lorge-Thorndike Intelligence Test, and who possessed adequate visual and auditory efficiency. The sample was stratified with respect to reading achievement and students were selected from various achievement levels.

The number of childrens' oral reading miscues to be analyzed were determined through the use of three different criteria: 1) a base level in which each child's miscues on the first five passages of the Diagnostic Reading Scales were analyzed; 2) a ceiling level in which the child's miscues up to and including the paragraph in which he exceeded the number of errors as specified by the test author; and 3) the 12 per cent level as determined by Biemiller (1969) which identified the cut-off point as the passage in which twelve per cent of the total number of words in the paragraph were miscued. The miscues were analyzed on the basis of their graphic and syntactic or semantic similarity to the words of the test passages and on the basis of the analysis were placed into stages of beginning reading. An analysis of variance was computed to determine the independence of the stages with respect to reading achievement and reading comprehension. The children's placement into stages was also compared with their teachers' perceptions of them as achievers in reading.

Findings from the analysis of the data indicated the following:

1) It is possible to place children into discrete stages of beginning reading, using their oral reading miscues in a single testing session.

2) Although five steps were described as possibly existing, children were allocated to only four stages on the basis of their miscues. There were no children in stage 1, probably due to the fact that the children had already received eight months of classroom instruction and had progressed beyond this point.

3) The ceiling criterion as opposed to the base and 12 per cent levels, seemed to provide the best cut-off point for miscue analysis.

4) The teachers' perceptions of their childrens' reading achievement was highly correlated with the childrens' placement into stages using the miscue criteria.

5) When teachers' ratings were compared on the basis of experience, the more experienced teachers' perceptions were less likely to conflict with the placement into stages as determined by the miscue criteria.

6) As children in stages 3 and 4 did not differ from each other throughout the study, these two stages may be considered as one for further research or instructional purposes.

7) When comparing high and low readers' use of syntax at the post-phrase level, the high readers excelled in using this portion of context, but did not differ in their use of pre-phrase material.

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CHAPTER I

INTRODUCTION AND PROBLEM

The importance of being able to read is becoming increasingly evident in an exceedingly complex world. Because of the vast amount of information available, and because of an increased emphasis on individualization, students are finding themselves doing considerably more reading on their own than was previously the case. The problem arises that despite the increased volume of knowledge that must be digested, there is a greater number of students who find themselves unable to read the material at their present grade level. Governments have poured millions of dollars into programs to "remediate" these readers who have been side-tracked somewhere in their school career.

The grade one student brings to his classroom a degree of oral and/or reading competency depending on his past experiences. If by using this competence a teacher is able to move beginning readers through the initial stages of reading perhaps more children may attain success in reading.

I. PURPOSE

The purpose of the present study is to determine if, by analyzing oral reading miscues, stages of beginning reading competency can be determined.

The relationship between the student's ability and the teacher's assessment of that ability will also be determined.

II. DEFINITION OF TERMS

For the purposes of this study, the following definitions will be used.

Stages of reading refers to the levels or phases that a beginning reader passes through on his way to becoming a proficient, mature reader.

Reading achievement indicates the child's performance on the Gates-MacGinitie Reading Test, Primary A, Form 2.

Teacher's ratings of reading achievement refers to the teacher's perceptions of her children's reading achievement as measured by a five-point scale.

Comprehension is defined operationally for this study and indicates the child's performance on the comprehension questions of the Diagnostic Reading Scales.

Miscue refers to the unexpected responses or non-responses a child makes while reading orally. Miscues to be analyzed in this study include substitutions, insertions, omissions, and non-responses. The word "miscue" is used synonymously with "error". The term miscue is used to avoid any value judgments.

Base passages refer to the first five passages of the Diagnostic Reading Scales. Each child of the sample was required to read these passages. The total number and type of miscues on the first five passages are used to determine a child's stage in beginning reading using this criterion.

Ceiling passage refers to the passage in which a child exceeds the number of errors specified by the author of the test. The total

number and type of miscues up to and including this passage are used to determine a child's stage in beginning reading using this criterion.

12 per cent passage is the passage in which more than 12 per cent of the total number of words in a given passage are miscued. The total number and type of miscues up to and including this passage are used to determine a child's stage in beginning reading using this criterion This was the criterion used in the Biemiller study (1969) and on which this study is based.

Contextual information refers to the way in which the reader combines the semantic and syntactic information of the material he has just read with the information he has brought to the situation to aid in word identification. See the definition of "syntactically acceptable" and "semantically acceptable" in the discussion of Miscue Analysis, p. 39, Chapter 3.

Orthographic information refers to the reader's use of his knowledge about letters and strings of letters to identify a single word. See the definition of "graphically similar" in the discussion of Miscue Analysis, p. 39, Chapter 3.

III. HYPOTHESES

In order to pursue the purposes of the study, the following hypotheses have been constructed. They are stated in research and null form. The significance level for rejecting the null hypothesis is .05.

Research Hypothesis 1

Grade one children placed in the various stages of the reading process, as determined by their use of orthographic and contextual information on the base passages will differ in their scores on a

reading achievement test. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the reading achievement scores of children placed in various stages as determined by analysis of their oral reading miscues on the base passages.

Research Hypothesis 2

Grade one children placed in various stages of the reading process as determined by their use of orthographic and contextual information on the base passages will differ in their performance on the comprehension questions. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the performance on the comprehension questions of children placed in various stages as determined by analysis of their oral reading miscues on the base passages.

Research Hypothesis 3

Grade one children placed in the various stages of the reading process as determined by their use of orthographic and contextual information on the ceiling passages will differ in their scores on a reading achievement test. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the reading achievement scores of children placed in various stages as determined by analysis of their oral reading miscues on the ceiling passages.

Research Hypothesis 4

Grade one children placed in various stages of the reading process as determined by their use of orthographic and contextual information on the ceiling passages will differ in their performance on the comprehension questions. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the performance on the comprehension questions of children placed in various stages as determined by analysis of their oral reading miscues on the ceiling passages.

Research Hypothesis 5

Grade one children placed in various stages of the reading process as determined by their use of orthographic and contextual information on the 12 per cent criterion passages will differ in their scores on a reading achievement test. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the reading achievement scores of children placed in various stages as determined by analysis of their oral reading miscues on the 12 per cent criterion passages.

Research Hypothesis 6

Grade one children placed in various stages of the reading process as determined by their use of orthographic and contextual information on the 12 per cent criterion passages will differ on their performance on the comprehension questions. The children in the most advanced stage will score highest.

Null Hypothesis

There is no significant difference between the performance on the comprehension questions of children placed in the various stages as determined by analysis of their oral reading miscues on the 12 per cent criterion passages.

Research Hypothesis 7

The placement of grade one children into stages of the reading process as determined by the base, ceiling and 12 per cent criteria will correspond with their teachers' rating of these children as achievers in reading.

Null Hypothesis

There is no significant correlation between the placement of children into stages as determined by the base, ceiling and 12 per cent criteria and their teachers' rating of these children as achievers in reading.

IV. ASSUMPTIONS

It is assumed that the childrens' performances are indicative of their actual ability to perform on the tasks used in this study.

A second assumption is that the three criteria (base, ceiling, 12 per cent) used to place the students into stages provide valid measures of the childrens' performances on these tasks.

A third assumption is that on the basis of the base, ceiling and 12 per cent criteria, one can pinpoint the stages in the reading process of beginning readers during a single testing session.

V. LIMITATIONS

The following factors are recognized as limiting the generalizability of the data collected in this study.

(1) The criteria used to place the children into stages of beginning reading are based on the use of the Diagnostic Reading Scales devised by George Spache. Children's performance on other oral reading tasks may produce different results.

(2) Children scoring more than one standard deviation below the mean I.Q. score were eliminated from the sample. Generalizations, therefore, would not be applicable to children in this category.

(3) The sample for the current study was selected from four urban schools in the city of Edmonton, Alberta, and the results can be generalized only to similar populations.

VI. SIGNIFICANCE OF THE STUDY

The importance of attaining success in the beginning stages of reading was discussed in the introduction of this chapter. Should the present study demonstrate a relationship between stages in the reading process of beginning readers, and

a) Reading achievement scores, or

b) Performance on a comprehension task, or

c) Teacher's ratings of children as achievers or non-achievers in reading,

it would suggest that this information could be used to determine the stage in reading of a given child, during one testing session. Once the child's stage is known, it would seem beneficial to develop teaching

strategies that would help move the child onto the next stage.

VII. OVERVIEW OF THE STUDY

In Chapter II the writer will review the literature which is considered pertinent to the study. Such a review would provide a framework for the present study.

The experimental design of the study will be outlined in Chapter III. Information regarding the sample selection, test administration and method of analysis of the data will be presented.

The results of the research will be presented and explained in Chapter IV.

The final chapter will present the summary, conclusion, implications and suggestions for further research.

CHAPTER II

REVIEW OF RELATED RESEARCH

> If the purpose of reading is to effect communication between reader and author then the purpose of the teacher of reading is to assist in the communication process. But teachers need to have a systematic knowledge of how children learn to read if they are to approach their task with any depth of understanding. They must know whether certain phenomena at different stages in the reading development demand corrective or remedial attention or whether they are merely benign and will disappear with further development (Becker, 1970, pp. 13 - 14).

Reading begins with the graphic input and ends with meaning as output. What happens between input and output has been hypothesized by numerous researchers, and is often referred to as the reading "process". Since one cannot get inside a child's head to find out what is happening, one could examine the "product" or output of the reading process to determine what is happening. There are two "products" of the reading process that one might examine: 1) the child's comprehension of what he has read; or 2) the oral output in an oral reading situation.

In recent years, researchers have realized that errors children make in their oral reading are clues to their reading development. This is in contrast to researchers (Munroe, 1928; McCullough, et al, 1946) who were first concerned with evaluating reading skill and diagnostic weaknesses to provide a starting point for remedial instruction.

This study is concerned with analyzing the oral output in an oral reading situation. Research has shown that the child's performance in an oral reading situation is indicative of how he is processing the information on the printed page. The purpose of this chapter is to review the literature related to the nature of the miscues a child makes

while reading orally. A second purpose is to review related literature regarding the different stages of development with respect to reading.

I. NATURE OF MISCUES IN READING

Perhaps the first use of studying the oral miscues of readers was to identify their reading levels in a test situation. Thus commonly standardized oral reading tests such as the Gray Oral Reading Test, the Gilmore Oral Reading Test and the Neale Analysis of Reading Ability allowed for the counting of errors or miscues which children made while reading. The common types of errors noted were additions, omissions, substitutions and mispronunciations. Although the quality of the miscues was noted, only the quantity of the errors was used in assigning a grade placement. Support for this point of view may have been derived from studies such as that conducted by Malmquist (1958). In a study of oral reading errors of first grade readers of differing reading ability, she posited that the difference between the errors of the groups was merely quantitative in nature. Poor readers made the same kinds of errors as good readers but only in larger quantities.

Goodman (1965) presented the first of a series of articles in a descriptive study of the oral reading of first, second and third grade children. For Goodman, reading is "the active reconstruction of a message from written language" (Goodman, 1965, p. 639). He viewed reading as "a psycholinguistic process" which is cued or miscued during the child's interaction with written language. The cue systems considered included those within words, those in the flow of language and those within the reader himself. Goodman concluded that children were more able to pronounce or recognize words in context than words in isolation.

He also concluded that the child's knowledge of language enables him to self-correct any errors he might make in oral reading, and regressions are the means by which the child corrects himself and learns.

In her descriptive study of oral reading phenomena of six grade one readers, Y. Goodman (1967) noted that all the children in her sample made miscues and most of these errors were at the word or phrase level. The grammatical function of the response was identical to the grammatical function of the stimulus. Y. Goodman noted that knowledge of syntax had a greater influence on miscues than did a knowledge of meaning, but as the children became more proficient they could use both syntax and semantics equally well. She also noted that when the language of the reading material was not like their own, the children attempted to translate it into their own language patterns.

In 1969, the Goodmans devised an elaborate taxonomy of cues and miscues in reading in order to analyze oral reading errors. Their classification system involved three general linguistic levels: phoneme-grapheme or letter-sound level, word-morpheme level, and grammatical-syntactical level. This taxonomy has served as the basis of a number of studies which have attempted to analyze children's reading miscues.

Weber (1970), one of Goodman's students, was interested in the qualitative aspects of childrens' miscues. In her study of grade one children, Weber became involved in the interplay between grammatical acceptability and graphic similarity of oral reading miscues. She devised a Graphic Similarity Index to indicate the degree to which the graphic similarity of an oral reading miscue approximated the stimulus word. The Graphic Similarity Index showed that the children in the high reading group (mean score = 407.87) scored over one hundred points above

the low reading group (mean score = 265.47) in their use of graphic cues. Weber also analyzed the grammatical acceptability of a substitution, insertion, or omission miscue using the preceding context up to and including the error. She found that the percentage difference in grammatical acceptability of miscues between the high reading group (92.3 per cent) and the low reading group (88.9 per cent) was negligible. She concluded that the children bring to the printed page their knowledge of English language structures which shape their reading responses into familiar language structures. This fundamental linguistic ability also determined whether a miscue was corrected or disregarded. Miscues that were grammatical in terms of the preceding context were disregarded twice as often as they were corrected. Conversely errors which were ungrammatical in terms of the preceding context were corrected twice as often as they were ignored. Data confirming the lack of difference in the number of grammatically acceptable errors of high and low reading achievers was also presented by Weber from a second study by Robinson (1966). In a grade one classroom an analysis of reading miscues indicated that over 88 per cent of the responses were grammatically acceptable and that there was little difference between achievement groups.

Of particular interest in Weber's (1970) study is the interaction between the graphic similarity of a miscue and its grammatical acceptability. When Weber used the inverse relation between graphic similarity and grammatical acceptability, she found that the grammatically unacceptable responses shared more graphic features with the stimulus word than the responses that conformed to the preceding context. From this finding, Weber inferred that when readers neglected the constraints of the preceding grammatical context, "they were attending to the

task of identifying and perhaps decoding the features of the graphic display" (p. 157).

Shandling (1970) analyzed the oral reading miscues of ten dyslexic boys, between the ages of eight and ten, still at the acquisition stage of reading. She concluded that in relation to the processing of graphic-phonemic, syntactic and semantic information "it was found that all subjects were strongest in the processing of syntactic information as they read" (Shandling, p. 267). Thus it appears that whether children experience or do not experience difficulty in reading, they tend to be more aware of syntax than of semantics or of the graphic form of words, and most of their miscues tend to be grammatically acceptable.

Coomber (1972) worked with third grade children of differing reading ability levels and used Weber's (1970) Graphic Similarity Index. He found that the higher reader's response would be more likely to match the stimulus word in initial and final position of the word as well as the interior of the word. When comparing the results of the syntactic measures, he concluded that the difference between the reading groups was not significant. Both measures of phrase reading - location of the error in the phrase and the conformity of repetitions to phrase structure grammar, revealed highly significant results and supported the hypothesis that children tend to read by phrases. Such evidence would give further support to Weber's (1970) research.

A further study dealing with levels of reading ability was conducted by Cromer and Wiener (1966). They defined reading as a

> skill that requires the individual to be able to utilize the partial information derived from scanning the printed material and have available patterns of responding to these cues which are congruent with the patterns of occurrences within his own language (p. 1).

These two researchers posited that the difference between good and poor readers can be attributed to the fact that the "poor" reader uses different cues in reading than the "good" reader. This difference in responding may be due to the fact that the "poor" readers may not have learned consensual patterns or they may have learned idiosyncratic responses too well.

To explore the differences between "good" and "poor" readers' responses to print, Cromer and Wiener (1966) used two different types of self-referent material: 1) first person present-tense material which simulates an individual's own experiences and evokes self-referent responding and 2) material with a strong affective content which evokes personal associations and interrupts the student's scanning of the material. They hypothesized that both "good" and "poor" readers would respond idiosyncratically using both kinds of material, but for the "poor" reader the mismatch between stimulus and response would be more evident. Also, as a result of the greater number of mismatches for the "poor" reader, his scanning would break down and cause further disruption.

Cromer and Wiener (1966) concluded from this study that both sources of material played a significant role in discriminating "poor" readers from "good" readers. The "poor" readers were more prone to evoke non-consensual responses on both self-referent and affective-content material. On a word association task the "poor" readers also gave significantly fewer consensual or common associations as did "good" readers.

Many educators have suggested solutions to the varying and incongruous responses of beginning readers. Sims (1972) set out to determine the effect of using dialect-specific material for beginning

reading instruction and used the Goodman Taxonomy of Cues and Miscues in Reading to evaluate its effectiveness. On comparing the miscues generated during the oral reading of Standard English material and dialect-specific material Sims concluded that the ten Black second graders had not learned to make effective use of the semantic and syntactic contexts of the material to help them make predictions about the material they were reading. As a result only one-quarter to one-half of their miscues resulted in structures that were acceptable within the semantic and syntactic contexts of either the Standard English or dialect-specific passages they were reading. In direct contrast to Weber's (1970) study, Sims concluded that the reader's use of corrective strategies was directly related to their reading proficiency rather than the child's knowledge of oral language. The more proficient readers tended to make more effective use of corrective strategies and their miscues tended to be of a higher quality in terms of semantic and syntactic similarity with the expected response. Sims, however, also reported that the degree of graphic similarity of the miscue to the expected response was due to reading proficiency which lends support to Weber's hypothesis. Miscue quantity was not related to miscue quality for Sim's subjects except that the children who had fewer miscues per hundred words scored higher on the comprehension tasks.

Barr (1972) described the patterns of word recognition errors of first grade children, based on two different instructional methods. She hypothesized that more non-response and graphically-constrained errors would occur for the phonic instruction method than for the sight word method. Barr concluded that through the sight word method, the children were able to remember the group of aural responses and some of

the graphic sequences. For words they were not sure of, the children substituted another aural response from words already taught. For the phonic method, the error responses consisted mainly of substitution errors that did not come from the words already taught. "A substantial number were either nonsense words or came from the child's total aural vocabulary" (Barr, 1972, p. 523) but tended to be graphically constrained as she had hypothesized. Barr agrees with Bruce (1964) that the phonic method identifies information so abstract that the child does not remember it. The result, nonsense and phoneme substitutions, suggests that some children have not developed the concept that a graphic sequence corresponds to an aural word. Thus, for Barr, the "findings suggested that different instructional methods influence differentially the pattern of word recognition errors" (Barr, 1972, p. 527). However, Barr did note error patterns which resembled those identified in a study by Biemiller (1969), [to be reviewed later in this chapter]. Her interpretation of the error patterns, however, differs from Biemiller's interpretation. Barr suggests that non-response errors are a signal that a child has changed strategies for responding to print. Biemiller, on the other hand, would interpret non-response errors as an indication of readiness for phonic instruction.

In summary, it appears that the quality of oral reading miscues is dependent on the proficiency of the reader. From the very beginning, children make use of their oral language when reading orally, and their miscues are dominated by the child's control over the syntax of the language. There appears to be no difference between ability groups in their use of syntax as they read. As they become more proficient readers, their miscues tend to be increasingly dominated by their knowledge

of semantics. The proficient reader's miscues also appear to be more graphically similar than the miscues of less proficient readers.

Goodman's (1970) definition of reading aptly summarizes the results of the research studies reviewed in the preceding pages of this study.

> Reading is a complex process by which a reader reconstructs, to some degree, a message encoded by a writer in graphic language (Goodman, 1970, p. 5).
>
> To understand the reading process, one must understand: the nature of the graphic input, how language works and is used by the reader, how meaning is reconstructed from the reader's prior learning and experience, what perceptual system is involved in reading. As we come to see the reader as a user of language, we will understand that reading is a psycholinguistic process, an interaction between thought and language (Goodman, 1970, p. 6).

II. STAGES IN THE DEVELOPMENT OF READING

Jenkinson (1969) in a discussion of theories of reading stressed the need for different models of reading depending on whether the skill involved was the acquisition of reading skills or the interrelationship between skills, techniques, materials and media involved in the decoding process. Jenkinson also stressed that how a child assimilates the meaning of a word is not identical with that of a mature reader. She stated "that we shall make greater progress if we do not attempt to account, at least in the same model, for both the beginning and the mature reader" (p. 58).

The development of reading comprehension in young children is sequential and depends on certain prerequisite perceptual, intellectual and personality factors. At any age level, readiness for reading

depends upon the individual's previous acquisition of knowledge and skills. Physical and mental capacities and environmental influences constitute the foundation for the development of reading skills. Sensory impressions build visual and auditory conditions for perception which are vital to word recognition skills and vocabulary development.

Strang (1970) posited that for beginning readers, the sequence seems to take this order: sensory input, discrimination of letters, spelling patterns and word forms, identification with the pronunciation of the word, and then comprehension of the meaning. "The relationships developed in this hierarchy are not only reciprocal but countless and intricate" (p. 8). Comprehension can occur without actual word pronunciation, but for the beginning reader some form of association with the printed symbol is necessary. The ability to read critically and creatively is dependent on basic vocabulary and word recognition skills, and these skills may be developed through whatever thoughtful reading the child might do.

Wiener and Cromer (1967) tend to see reading as a two stage process - identification and comprehension. In attempting to conceptualize reading they noted several issues which have resulted in confusion and ambiguity in the study of reading. They emphasize that several definitions of reading equate the acquisition of reading skills with identification behavior while accomplished reading is associated with comprehension behavior. Yet these definitions fail to note the relationship between identification and comprehension. For the child in the acquisition stage, identification is a necessary antecedent to comprehension, but for the accomplished reader this may not be so.

Jenkinson's (1969) view supports Wiener and Cromer (1967) in that the failure to distinguish between the acquisition stages of reading and the accomplished stages of reading has resulted in much confusion in the field of reading. Wiener and Cromer (1967) view reading as a form of communication in which there must be 1) discriminative response to the graphic cues, 2) decoding of graphic symbols to speech, and finally 3) getting meaning from the printed page. Although the mature reader can perform all these functions, "a child in the early stages of acquiring reading skill may not be doing all these things" (Gibson, 1965, p. 1066). Further "some aspects of reading must be mastered before others and have an essential function in a sequence of development of the final skill" (Gibson, p.1067).

Fries (1962) views the acquisition of reading skills from a linguistic point of view. In the first stage, the child is attempting to transfer from the auditory to the visual signs of the language. This stage is complete when the child can rapidly and accurately respond to the visual signs that represent language signals. According to Fries, the second stage culminates when the child's responses to the graphic shapes are automatic, and "his comprehension of the meaning enables him to supply those portions of the signals which are not in graphic representation themselves" (p. 132). The third stage culminates when "the child relies more on reading than on language to develop further experience" (p. 132). From Fries' conceptualization of reading, it appears that there are stages in the reading process, and each stage is dominated by specific behaviors.

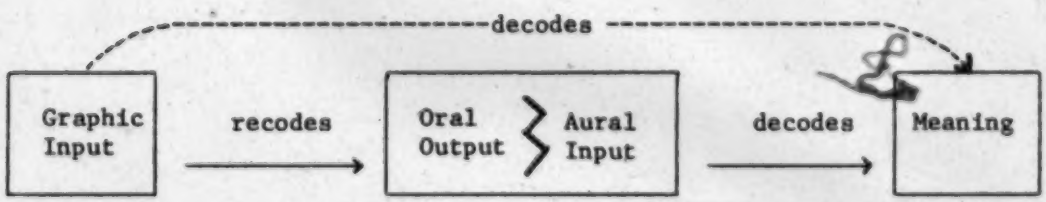
Goodman (1970) has focused on the beginning reader. He has devised a model of a beginning silent reader and a proficient silent

reader. By studying his models, the idea of stages in reading is fully supported - Goodman calls them proficiency levels. "Insufficient evidence is available to indicate here that all children or any individual child must pass through each proficiency level. But those I have studied do seem to pass through these levels" (Goodman, 1967, p. 20). Goodman's study of children tended to focus on their oral reading miscues - that is the errors they made while reading passages orally. Although Goodman himself admits that there is considerable difference between a proficient reader when he reads orally and silently his entire miscue analysis is based on the assumption that for the beginning reader, the oral and silent reading process is similar (Goodman, 1968, p. 18). For Goodman, oral reading (recoding) is not as important as comprehension (decoding) but when it is combined with comprehension, it can provide important clues which can contribute to a better understanding of the reading process.

Goodman (1968, pp. 16 - 20) describes the stages of reading proficiency through which the mature reader has proceeded and in doing so shows how oral and silent reading differ.

In the earliest stage of reading, the child uses his oral language to derive meaning from the printed page, as shown in the diagram below.

EARLY READING

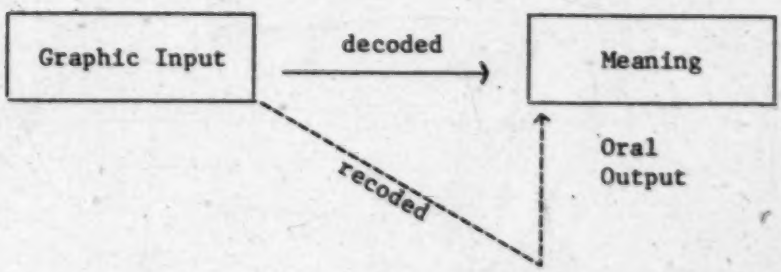


Here the child recodes the graphic input as speech and then utilizing his own speech as aural input decodes to meaning (Wiener and Cromer, 1967). This process is similar to that of listening. It should be noted that some decoding directly from the graphic input can occur even at the earliest stages.

A second stage in the process would be needed "to help the learner adapt his recoding strategies and techniques in a full language situation in which all information is available and decoding may result" (Goodman, 1970, p. 18).

For the mature reader recoding is not necessary to derive meaning, as indicated in the diagram below:

PROFICIENT READING



At this third stage of proficiency, the recoding and decoding occur simultaneously with the reader decoding meaning directly from graphic input. Recoding now becomes a rapid series of guesses. The less available information the reader uses, the more rapid and efficient is his reading. At this stage oral reading becomes from a different process that which occurs in the earlier stages. For the proficient reader, the process of decoding directly from graphic print has become so habitual

that the student must first decode and then encode as oral output. The result is often considerable change from the original graphic input to oral output. To produce completely accurate oral reading the child must be able to adjust his normal pace and his mode of information processing to encode orally at the same time he is decoding.

Although Weber (1970) did not indicate that the students went through a series of developmental steps she does imply such phases in her study. In one phase the students made grammatically acceptable but graphically dissimilar errors. Weber attributed this to the fundamental linguistic ability that the child brings to the printed page. Phase two of Weber's study showed a high percentage of errors that were graphically similar but not consistent with preceding context. In this phase the students were attending to the task of identifying and decoding features of the graphic display. A beginning reader in this stage does not appear to use both sources of information. Although a third phase would quite naturally follow here in which the student is able to use both context and graphic information, Weber does not mention this third phase.

Biemiller (1969) in a longitudinal study with grade one students (N = 42), showed there were three stages in the reading process of beginning readers. Initially the student uses his knowledge of oral language when asked to read passages orally without always attending to the print or graphic shape of letters and words. This stage was identified as the Pre Non-Response stage. The student might succeed in identifying one word using graphic information, and using the syntactic and semantic information of his oral language, he would guess at the next word or words based on these constraints. This procedure would frequently yield contextually-acceptable miscues. The second stage, Non-Response,

was characterized by the student stopping before a word he did not know, and then skipping the word/words. According to Biemiller, a student in this stage is attending to the graphic features of the word but he is unable to recognize the word or use the preceding context to aid word identification. A student in the third stage, Post Non-Response, was attending to the visual forms of letters and words as well as using his knowledge of language to guide his responses in oral reading.

Biemiller found that students who reached the Non-Response stage very quickly in the school year and continued on to the Post Non-Response stage were categorized by their teachers as being the better readers at the end of the school year.

Although there has been some research into stages of the reading process with beginning readers, there has been little research into stages in reading at the intermediate grade level.

Becker (1970) in her study of grade four children found the boys in her sample and the children in the High I.Q. groups made more miscues than the girls in the Medium or Low I.Q. groups. Becker found that the boys and the High I.Q. groups were more intent upon obtaining meaning, and may have been using certain meaning-getting strategies despite the increased number of oral reading miscues. She postulated that these children were silently decoding to meaning directly from the graphic input, and then encoding meaning as an oral output, resulting in an increased number of miscues. She postulated this stage would correspond to Goodman's third level of reading proficiency. Becker also concluded that her grade four students were at a critical developmental stage in the comprehension of relationships, and thus fifty per cent of the miscues were function words which affected relationships. The children at this

stage placed extra emphasis upon the meaning while miscuing on the syntax. Becker agreed with Y. Goodman (1967) that reading proficiency is on a continuum which progresses from an awareness of syntax to an awareness of meaning.

In the beginning stage of learning to read, oral and silent reading are, quite probably, identical processes. McCracken (1967) in a study of reading rates concluded that oral and silent reading rates for children in grade one and two are identical. From this, McCracken concluded that the reading process for these children is very similar whether they are reading silently or orally. Goodman (1968, p. 18) supports this view. He notes that by grades three or four, children can read silently at a slightly faster rate, but it is not until grade six that there is a pronounced difference between oral and silent reading rates. As Eagan (1973) states, "It would seem, then, that not until sixth grade are the oral and silent reading processes of children quite distinct" (p. 48).

Jenkinson (1957) focused on the comprehension aspect of reading in a study with senior high school students. She postulated that the "cloze" procedure was a useful device to study the product and process of reading comprehension for students in grades ten to twelve. Jenkinson concluded that the total "cloze" scores increased from grade to grade, with grade twelve students scoring the highest. In an empirical test of the degree of difficulty of different parts of speech, Jenkinson concluded that the material classified as "easy", "more difficult" and "hard" by adult readers was not categorized by high school students in the same way. This led her to conclude that "processes used by adolescents might not be so highly integrated and synthesized as

those of adults, and thus more susceptible to analysis, and yet more comprehensive than those used by younger children" (Jenkinson, p. 67).

Cromer (1970) worked with sixty-four college freshmen and sophomores for he wanted to study accomplished readers to determine how they organize their reading input into meaningful units. He cited Wiener and Cromer's (1967) study in which reading was defined as a two-stage process-identification and then comprehension. By studying accomplished readers he, like Jenkinson, was more concerned with comprehension of reading material. Using Wiener and Cromer's (1967) difference-deficit model of poor mature readers, Cromer organized reading material in four different formats - regular sentences, meaningful phrases, single words and fragmented groups of words. He postulated that these "difference" readers who, like the "good" readers, had adequate intelligence, language skills, and vocabulary skills but were low in comprehension skills, had the skill to read aloud and pronounce individual words correctly but did not organize their reading material in a meaningful way. He also postulated that these "difference" readers could organize input into meaningful units but for some reason they persisted in reading word by word. Cromer then demonstrated that for the "difference" readers, when input was preorganized into meaningful units (phrases), their comprehension was improved. Yet on a word by word presentation, comprehension was not significantly affected as it was for the good readers. This would support the contention that this type of reader is typically a word-by-word reader. Cromer also discussed the "deficit" reader who possessed the same qualities as the "difference" reader except that he had considerably lower vocabulary skills. For this group Cromer found that none of four formats produced a significant improvement in comprehension. Cromer

concluded by stating that

> the transformation of single words into auditory stimuli (identification) may facilitate the derivation of meaning at the earliest stages of learning to read, and this approach may be necessary, but a child must begin quickly to learn that the meaning rather than a perfect naming of all words individually is paramount (p. 483).

Cromer agrees with Goodman (1965) that children should be taught almost immediately that words derive part of their meaning from context.

Carver (1970) in a study of mature college readers produced results that conflict with those of Cromer (1970). Using the Nelson Denny Reading Test, Form B, and comparing the comprehension of material which was "chunked" into five experimental formats, Carver concluded

> that the spatial separation of reading material into meaningfully related groups of words will probably not improve the reading efficiency of mature readers, reading at their normal rate, no matter what method is used to separate the material (p. 296).

The important difference between Carver (1970) and Cromer (1967) however, is that Cromer was using "poor" mature readers as his sample. Carver (1970) did not specify either the reading achievement level of his students or give any indication of their reading proficiency.

Latham's (1973) study also focused on the mature reader. He used mature college level students in his research on cognitive synthesis and comprehension. He chose comprehension because he felt the "mature" reader was beyond the word recognition stage. He found that "good" mature readers make use of their internalized tacit knowledge of grammatical structure when they read. More specifically they employed the lowest major constituent (a chunked segment of language) as identified by Latham, or a grammatical structure similar to it. In comparison the

"poor" mature readers, regardless of how the material was presented, responded to the written language a word or two at a time.

> For these readers, language, in its written form, is processed in an essentially linear fashion. The meaning of a written sentence is pursued by a process of simple summation of individual word meanings (p. 374).

It would seem then that these "poor" readers may still be at the stage of identifying words on an individual basis rather than realizing that meaning is gained from the identification of the meaning of connected words.

III. SUMMARY

In summary, the reviewed literature tends to suggest that an individual's oral language is very important in determining how he reads and many of his miscues may be explained in terms of his oral language proficiency. The literature also indicates that there are distinct differences between the characteristics of a reader at the acquisition stage of learning to read as opposed to the mature accomplished reader. More specifically, Biemiller (1969) showed that beginning readers pass through a series of stages (Pre Non-Response, Non-Response, Post Non-Response) when learning to read. These beginning readers seemed to manifest different reading behaviors in terms of types of miscues made as they progressed through these stages.

This study will be an extension of the Biemiller (1969) study. Instead of using a five month longitudinal experiment to determine stages in the reading process of beginning readers, this study will attempt to pinpoint these different stages during one testing session. The implication being that if stages can be pinpointed at any time during the first year of schooling, then the teacher could help the child

develop reading strategies that would move him onto the next stage. In the following chapter, the design for such a study will be described.

CHAPTER III

THE EXPERIMENTAL DESIGN

This chapter describes the design, sample selection, test instruments as well as their reliability and validity, pilot study, method of data collection and finally the statistical measures used.

I. DESIGN OF THE STUDY

The main purpose of the study is to investigate the possibility of pinpointing stages in the reading process of beginning readers during a single testing situation. It is partly a replication of a study by Biemiller (1969) who identified stages of beginning readers through observations over an eight month period. A sample of grade one readers, of at least average I.Q. was chosen for the study. The distribution included students of high, average, and low reading ability. Students were placed in stages on the basis of various miscue criteria and analysis of variance was computed to determine the independence of the stages with respect to reading achievement.

The child's miscues are analyzed using three different criteria: 1) a base level in which each child's miscues on the first five stories of the Diagnostic Reading Scales will be analyzed; 2) a ceiling level in which the child's miscues up to and including the paragraph deemed to be too difficult as determined by the Spache criteria; and 3) the 12 per cent criterion as determined by Biemiller (1969). Here the child's miscues up to and including the paragraph in which 12 per cent of the total number of words in the paragraph are miscued will be analyzed.

II. SAMPLE SELECTION

The sample for this study was chosen from five grade one classrooms within the Edmonton Separate School System. In order to ensure a range of high, average, and low readers, the sample was chosen through a stratified random sampling procedure.

The entire grade one population in the five schools (N = 104) was divided into six groups on the basis of their comprehension scores on the Gates-MacGinitie Reading Test, Primary A, Form 2. The mean of the comprehension scores was computed, and the cut-off points between the groups were set at the following intervals: one-half standard deviation above and below the mean, one standard deviation above and below the mean, and more than one standard deviation above and below the mean. It was decided that below average I.Q. may be a factor in reading performance. Consequently the Lorge-Thorndike Intelligence Test, Level I, Form A, Primary Battery was administered to the total grade one population, and children whose scores were more than one standard deviation below the mean were excluded from the sample. One child was eliminated on the basis of this criterion. Also eliminated from the study were five children who were absent for the administration of the intelligence test.

Since visual difficulties might influence the students performance on the reading tasks, the entire sample of students eligible after the administration of the Lorge-Thorndike Intelligence Test, was administered a visual screening test. The Keystone Telebinocular was used to assess each child's visual efficiency. The students were tested on two of the Keystone Visual Survey Tests - fusion, and useable vision with

both eyes, both at the near point. These two basic areas were considered to be essential for unhampered visual functioning while reading the passages of the study. On the basis of the test, two children were eliminated from the sample and referred for further visual testing.

From the students who remained eligible, the following numbers of subjects were chosen from the various intervals. From the intervals of one-half standard deviation above and below the mean on the Gates-MacGinitie Reading Test six children were chosen. From the interval of one standard deviation above and below the mean seven children were selected. From intervals of more than one standard deviation above and below the mean seven children were selected. The final sample, therefore, consisted of 40 grade one children with a mean age of 78.72 and a standard deviation of 5.88 months. Table 1 summarizes the chronological ages, I.Q. scores and reading achievement scores of the sample.

TABLE 1

MEAN CHRONOLOGICAL AGE, READING COMPREHENSION AND INTELLIGENCE SCORES OF THE SAMPLE

Reading Achievement Groups	BOYS			GIRLS		
	High	Average	Low	High	Average	Low
Chronological Age	78.23	78.01	79.62	78.83	78.71	78.77
Reading Comprehension	28.24	19.00	9.81	27.00	22.63	13.87
Intelligence Quotient	124.83	106.50	105.72	113.38	105.63	104.44

III. TEST INSTRUMENTS

Standardized Tests

1. The Keystone Visual Survey Test

This visual screening device is produced by the Keystone View Company of Meadville, Pennsylvania, U.S.A. It is an individually administered test which involves the use of the Keystone Telebinocular instrument. This instrument requires the child to look through two glass lenses and respond to the examiner's questions concerning the visually-presented stimuli. The total test consists of fourteen card presentations or subtests, nine of which are placed at the far-point position, which is the equivalent of twenty feet. The remaining five card presentations are placed at the near-point which is the equivalent of an actual distance of sixteen inches.

As suggested in the Keystone Instruction Manual (1961) a child experiencing difficulties in lateral posture, fusion and useable vision at near-point would also be hampered in reading at near-point. Therefore, considering the study involves reading of passages at the near-point, the foregoing subtests were used to screen out children experiencing visual deficiencies in these areas.

2. Auditory Screening

A check of the children's medical records with the school nurses concerned indicate that the children chosen for the sample had adequate hearing.

3. Lorge-Thorndike Intelligence Test, Level I, Primary A, Form 2

This instrument was designed to provide a measure of "abstract intelligence", (the ability to work with ideas and the relationship among ideas expressed primarily in verbal symbols). At the Grade K-1

level, the test consists entirely of pictorial type items divided into three subtests, which are:

Subtest 1 - Oral Vocabulary: The child is required to demonstrate an understanding of orally expressed ideas by marking one of four possible pictures. There are twenty-five test items as well as four practice items.

Subtest 2 - Crossing Out: The child is required to demonstrate an understanding of relationships between ideas by crossing out the picture that does not belong. There are twenty test items as well as two practice items.

Subtest 3 - Pairing: The child is required to demonstrate an understanding of relationships between ideas by circling the two pictures which belong together. There are twenty test items as well as two practice items.

Reviews (Buros, 1959) have indicated that test-retest reliability coefficients range from .76 to .90 at all levels of this test. Validity was established by correlating test scores with the results from the Stanford-Binet and the WISC. Correlations of .60 and higher would indicate that the Lorge-Thorndike is one of the best tests available from the point of view of the psychological constructs upon which it is based. The major weakness of the Lorge-Thorndike is it's "lack of adequate data on predictive and concurrent validity" (Buros, p. 479).

4. The Gates-MacGinitie Reading Test, Primary A, Form 2

This test was chosen as the measure of reading achievement mainly because it is both easily administered and well standardized. At the Primary A level, intended for first grade students, the test is divided into two subtests:

Subtest 1 - Vocabulary: This subtest samples the child's ability to recognize or analyze isolated words. Each test item consists of four printed words and a picture illustrating the meaning of one of the words. The students' task is to circle the word that best corresponds to the picture. This subtest contains forty-eight exercises as well as two practice items.

Subtest 2 - Comprehension Test: This subtest samples the child's ability to read and understand whole sentences and paragraphs. Each passage is accompanied by a panel of four pictures. The child's task is to mark the picture that best illustrates the meaning of the passage or that answers the question in the passage. This subtest contains thirty-four items of increasing difficulty as well as two practice items.

Reviews (Buros, 1968) have indicated that the alternate-form reliability coefficients vary from .67 to .87 at all levels of this test. These coefficients may be regarded as fairly satisfactory (Buros, p. 300). Although the Gates-MacGinitie Reading Test consists of two subtests - Vocabulary and Comprehension, only the scores on the Comprehension subtest were used in selecting the sample for this study. The alternate form and split-half reliability for the Comprehension section of Primary A are .83 and .94, respectively.

5. Diagnostic Reading Scales (Spache)

This test consists of six subtests used to assess a child's reading difficulties. However, the two scores of interest in this study are oral reading and oral reading comprehension. There are two passages available at each of the following grade levels: 1.6, 1.8, 2.3, 2.8, 3.3, 3.8, 4.5, 5.5, 6.5, 7.5 and 8.5 as reflected by readability formulas

which take into consideration vocabulary and sentence length.

The oral reading level is determined by the highest level passage a child can read with no more than the average number of errors (for children at that reading level) and with 60 per cent comprehension.

The measures of validity cited in the manual suggest that the Diagnostic Reading Scales reveal similar results to the California Reading Test and to ratings by first grade teachers. The results are not as consistent with the results from the reading section of the Metropolitan Achievement Tests and the paragraph meaning section of the Stanford Achievement Test. According to Buros (1968) the Diagnostic Reading Scales

> ...provide one of the most quickly obtainable and most meaningful approaches presently available for the diagnosis of reading skills and difficulties (p. 822). The reliability coefficient for the Instructional level as determined by the K-R formula 21 is .84.

The Diagnostic Reading Scales were selected after the initial pilot study based on the Gilmore Oral Reading Test, revealed that the better oral readers were being penalized as a result of non-responses on more difficult material. There were so few passages on the Gilmore, and the ascent of difficulty was very rapid. Good readers persisted into the more difficult passages and the errors made tended to be of the non-response type. Since they usually made few errors in total, non-response errors made up at least 50 per cent of their total errors and consequently they were classified into a stage of reading not consistent with their teachers' ratings. The Gilmore Oral Reading Test, then, was discarded as a test of oral reading.

Whereas the passages used by Biemiller (1969) appeared more appropriate than the Gilmore, the Diagnostic Reading Scales contained

more passages, particularly at the lower grade levels.

A second pilot study was then conducted using the Diagnostic Reading Scales; the students' performance in the oral reading of these passages was more consistent with their teachers' rating of them as achievers or non-achievers in reading.

6. Procedures and Directions for Administration

After rapport was established, each child was asked to read one paragraph and answer the comprehension questions from the Gilmore Oral Reading Test, Form D. This was treated as the trial run for each child and as such was not included in the formal analysis. Each child was then asked to read at least the first five stories from the Diagnostic Reading Scales and answer the comprehension questions related to each story. If the child exceeded the nine miscues prescribed for the fifth story, the oral reading was discontinued. If he achieved less than nine errors, the oral reading continued until he reached his ceiling paragraph, as determined by the author of the test.

The passages of the Diagnostic Reading Scales were prefaced with these instructions: "_____ I have some stories I would like you to read out loud for me. These stories will get harder and you will not know all the words but I want you to try as many as you can. When you don't know a word I will point for you to move on to the next word. After you have read each story I will ask you some questions about the story. Do you have any questions? This is story number one."

7. Teacher Ratings of Beginning Readers

Research has indicated that teacher ratings of beginning readers are as valid as readiness tests in predicting reading achievement. Kermonian (1962) compared teacher ratings with scores on the Metropolitan

Readiness Test. The test scores correlated .73 and the majority of errors were made by teachers over-rating their students. The major weakness of the Kermonian study was that no comparison of the teacher ratings or Metropolitan achievement tests was made with later reading achievement. Henig (1949) used a five-point categorization of readiness ratings for both the readiness tests and the teacher ratings. The results indicated that the teacher ratings were as valid as the readiness tests in terms of predicting later reading success. Kottemeyer (1947) also concluded from his work that teacher ratings are valid indicators of reading achievement. Kottemeyer's study also indicated that teachers with ten years or more of experience made more accurate predictions of their students' reading achievement than teachers with less than ten years experience.

The five teachers involved in this study were asked to rate their children's reading achievement on a five-point scale.

1	2	3	4	5
Low		Average		High
Experiences much difficulty in reading. Has achieved practically no success.		Is reading at present grade placement.		Reading above grade level. Works fairly independently.

The teachers were given the following directions in connection with using the scale: "Your assistance is appreciated in rating the children (whose names appear enclosed) on the following scale according to their reading achievement. Points 1, 3, and 5 have been described. If you feel a child fits between points 1 and 3, or 3 and 5 please rate him 2 or 4 respectively."

IV. DATA ANALYSIS

A. Phrase Level

Research has shown that when children initially begin to read, their responses to the print on the page are guided by their knowledge of oral language. The responses may be consistent or inconsistent with various segments of language from a word to a sentence. Much of the work on oral reading miscues analyzed miscues in terms of the phrase. Since "phrase" is arbitrarily defined, in this study a phrase was defined as being synonymous with the lowest major constituent (Latham, 1973). The entire eleven passages in the Diagnostic Reading Scales were divided into phrases or lower major constituents and the child's miscues were analyzed in terms of their syntactic or semantic acceptability at the phrase level. If the miscue occurred at a phrase boundary it was analyzed in terms of its congruency with the words in the preceding or succeeding phrases; if it occurred within a phrase, it was analyzed in terms of the words preceding or succeeding it up to the phrase boundary.

B. Miscues

The following types of miscues that a child makes while reading orally were noted for analysis.

a. Substitutions - the child says a different "real" word than that on the printed page.

e.g. Jane likes her cat. (Text version)
Jane likes here cat. (Student version)

b. Insertions - the child adds a word to the text of the passage.

e.g. Jane likes her cat. (Text version)
Jane likes her pretty cat. (Student version)

c. Mispronunciation - the child pronounces a nonsense word for a real word.

e.g. The boy threw the ball. (Text version)

The boy tur the ball. (Student version)

d. Non-Response - the child hesitates for a minimum of five seconds and then skips the word or says that he doesn't know the word. If the child is attempting to mediate the word, he is allowed ten seconds to synthesize the sounds before he is directed to move onto the next word.

e. Omission - the student leaves out a word, but does not hesitate for a minimum of five seconds.

e.g. Dick takes good care of Spot. (Text version)

Dick takes care of Spot. (Student version)

C. Miscue Analysis

The above indicated miscues were analyzed in the following ways:

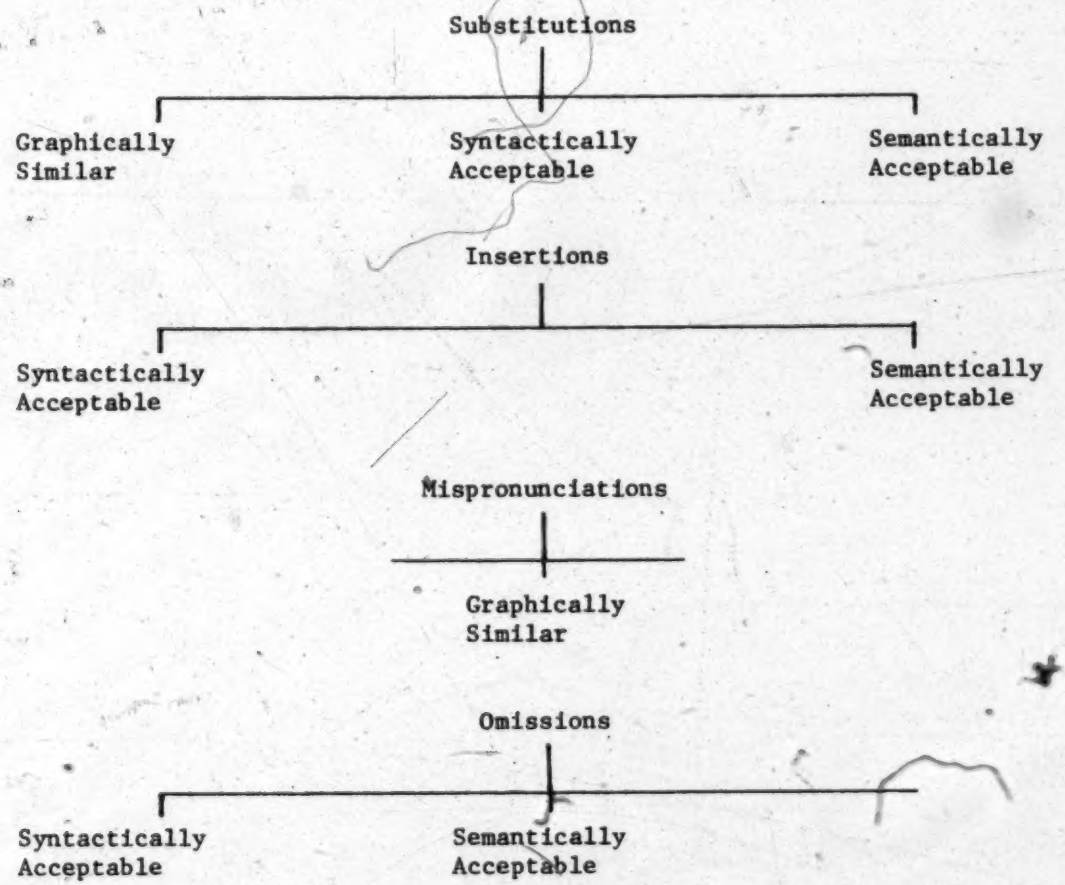
a. Graphically similar - the child pronounces a word for the printed word that has an initial similar letter or a sequence of two letters which are contiguous and which may be reversed.

b. Syntactically acceptable - at the phrase level, a word has been replaced with another word performing the same grammatical function.

e.g. a noun for a noun etc., or when the word/words inserted or omitted are grammatical in terms of its co-occurrence with the other words at the phrase level.

c. Semantically acceptable - words which are substituted, inserted or omitted are meaningful at the phrase level.

An overview of the Miscues and their analysis is given in the diagram below.



D. Criteria for Determining Stages in the Reading Process

Biemiller (1969) initially hypothesized four stages in the reading process of beginning readers. Once the child came out of the non-response stage, Biemiller hypothesized the child would make predominately graphically-similar miscues for a period of time before he was able to use both the orthographic features and the context of the story

as he reads. However, he found the differences between these two stages were not significant so he conflated his findings to include three stages. This study initially began with the assumption of Biemiller's three stages, but through a pilot project was found necessary to expand the assumption to five stages to incorporate some individual performances which were not accounted for using the three stage distinction.

The criteria for the five stages hypothesized are given below.

Stage 1 - Of the total number of miscues less than 50 per cent are graphically similar but at least 50 per cent are semantically or syntactically acceptable but not semantic substitutes.

Stage 2 - Of the total number of miscues at least 50 per cent are no response.

Stage 3 - Of the total number of miscues less than 50 per cent are graphically similar, less than 50 per cent are semantically or syntactically acceptable and less than 50 per cent are no response.

Stage 4 - Of the total number of errors at least 50 per cent are graphically similar but less than 50 per cent are semantically or syntactically acceptable.

Stage 5 - Of the total number of errors more than 50 per cent are graphically similar and at least 50 per cent are semantically or syntactically acceptable including semantic substitutes.

E. Inter-rater Reliability

The oral reading miscues of four children, selected at random, were analyzed by another rater to establish the reliability of the measuring instrument. There was perfect agreement between the two raters

with respect to the number and type of miscues noted and the reading stages into which they would be placed.

V. PILOT STUDY

A pilot study, using fifteen grade one students, was conducted in January, 1974. The students were distributed over high, average and low reading ability on the basis of their teacher's ratings. The purpose of the pilot study was to obtain further information with regard to the following areas:

a) to determine the feasibility of using the Gilmore Oral Reading Test, Form D as a measure of reading ability.

b) to test whether there was evidence of differing performances in oral reading by the high and low readers.

c) to check out the test instructions to be used.

d) to determine if the student's stage in beginning reading could be determined on the basis of the number and type of miscues noted while the student read orally.

e) to test whether there was evidence of differing performances on the comprehension questions of the Gilmore Oral Reading Test, Form D by the high, average and low readers.

f) to test if the teacher's perceptions of her students' achievement in reading was consistent with the student's performance on the various tasks.

On the basis of the results of the pilot study, the following decisions were made:

a) the Gilmore Oral Reading Test, Form D was found unsuitable, and was, therefore, discarded. The Diagnostic Reading

Scales, devised by George D. Spache, were selected as the the basic material for the oral reading.

b) there was evidence of differing performances in oral reading by the high and low readers.

c) the children appeared to comprehend the instructions without difficulty.

d) the majority of the children in the pilot study could be appropriately placed into stages based on the number and types of miscues noted.

e) there was a difference between high and low readers in their performance on the comprehension questions of the test.

f) the teacher's perceptions of her children's achievement in reading was consistent with the majority of the children's performances on the various tasks.

A second pilot study was conducted in April to determine the feasibility of the Reading Diagnostic Scales as the set of reading passages. These were found to be suitable but it was decided to administer the reading passages according to three sets of criteria - base, ceiling and 12 per cent.

VI. COLLECTION OF DATA

The visual screening tests were administered by the experimenter and an assistant to each subject in the sample. This screening process lasted three to five minutes per child.

The Gates-MacGinitie Reading Tests were administered to each grade one class as a total group within their respective classroom, with

the assistance of their teacher. Approximately forty-five minutes was involved in each administration.

The Lorge-Thorndike Intelligence Test was administered to each grade one class as a total group within their respective classroom. The test author recommends one proctor per ten to fifteen children being tested in groups. Therefore, the classroom teacher and the writer were involved in the administration of the I.Q. test. The testing was conducted during class times at three different sessions with rest intervals allotted for between each session. Approximately forty minutes was required for each administration.

The administration of the oral reading of the stories and the answering of the comprehension questions was completed on an individual basis, in a private room, by the experimenter. These sessions were recorded on tape and required approximately twenty-five minutes per student.

VII. ANALYSIS OF DATA

The data for this study were analyzed, using the following analysis:

1. Pearson-Product Moment Correlation (DEST02)

Using this test correlation matrices were computed for the stages, the Gates-MacGinitie scores, the comprehension scores and the teachers' ratings within each of the criteria (base, ceiling, 12 per cent).

2. One Way Analysis of Variance (ANOV 15)

This one way analysis of variance was used to determine whether differences existed between the reading groups within stages on their

reading achievement comprehension scores on the base, ceiling and 12 per cent passages.

3. Scheffé Multiple Comparison of Means (ANOV 15)

This procedure was used to determine the difference between the Gates-MacGinitie Reading Achievement scores and between the Oral Reading Comprehension scores for children grouped according to various stages of beginning reading.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this study was to determine the possibility of placing children, who are beginning to read, into stages according to their performance on an oral reading task. Each child read the first five paragraphs from the Diagnostic Reading Scales. These five passages constitute the base level. If, on the fifth paragraph, the child exceeded the number of errors established by the author, the oral reading was discontinued. Otherwise the oral reading continued until the child reached his ceiling level (a certain number of errors specified by the test author). The child's oral reading performance was also analyzed in terms of Biemiller's 12 per cent criterion which referred to the passage in which the number of miscues was at least 12 per cent of the number of words in the passage. These data were compiled to provide a comparison with Biemiller's data.

The purpose of this chapter is to present and discuss the analysis of the test results from each of the criterion above under the following headings:

1) Stages of learning to read as determined by the base passages.
2) Stages of learning to read as determined by the ceiling passages.
3) Stages of learning to read as determined by Biemiller's 12 per cent criterion.
4) Teachers' ratings and placement in stages as determined by the base, ceiling and 12 per cent criteria passages.

5) Implications of different stage-placement criterion.

6) An analysis of graphic and syntactic miscues of high and low readers.

I. STAGES OF LEARNING TO READ AS DETERMINED BY THE BASE PASSAGES

Reading Achievement - Four Stages

The children were divided into groups according to the criterion as specified on page 30, Chapter 3. An analysis of the data on the basis of the base passages indicated that there were no children who would be placed in stage 1. Consequently, there were no subjects in this cell. (This finding held regardless of the criterion used for analysis of miscues). If this study had been completed earlier in the school year, there would most likely have been some students in stage 1. This was indicated during the pilot study in January, 1974. For example, one child made up a story about his friend and himself playing. The story lasted for three paragraphs and the experimenter had to continue to ask the child which line he was reading. This is a typical performance of a stage 1 reader, as defined by Biemiller (1969).

The means and standard deviations on the Gates-MacGinitie Reading Test of the children placed in stages 2 to 5, as determined by the number and types of miscues made by each child on the base passages are shown in Table 2. Children in stage 2 scored the lowest on the reading achievement task while children in each succeeding stage scored higher.

To determine if the reading achievement scores differed significantly between stages, an analysis of variance was conducted. The data are shown in Table 3.

Results indicate that there is a significant difference between the reading achievement scores of children placed in the four stages ($p < .01$).

TABLE 2

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS FOR THE FOUR STAGES AS DETERMINED BY BASE PASSAGES

	2	3	4	5	TOTAL
Mean	14.45	17.000	18.33	24.41	19.72
Standard Deviation	5.05	8.97	6.80	5.23	7.11
Number of Subjects	12	4	7	16	N=39

TABLE 3

SUMMARY OF ANALYSIS OF VARIANCE OF THE READING ACHIEVEMENT TEST OVER FOUR STAGES AS DETERMINED BY BASE PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	727.71	242.57	3	6.81**
Within Means	1246.18	35.61	35	

**Significant at the .01 level

In order to determine between what specific stages there was a difference, a Scheffé test on the comparison of means was calculated.

These data are shown in Table 4. The only significant difference existed between stage 2 and stage 5.

TABLE 4

THE SCHEFFÉ COMPARISON OF MEANS ON READING ACHIEVEMENT OVER FOUR STAGES AS DETERMINED BY BASE PASSAGES

	2	3	4	5
2		NS	NS	**
3			NS	NS
4				NS
5				

**Significant at the 0.01 level

NS-Not Significant

Thus, although children in each succeeding stage scored higher, it was only the stages at the ends of the continuum which appeared to be distinctly different.

Comprehension Questions - Four Stages

In addition to reading the base stories orally, the children were asked a series of comprehension questions regarding the story content. The use of comprehension questions is one way of analyzing student achievement in reading. In related research studies there has also been disagreement about the relationship of number and types of miscues to the level of reading comprehension. Table 5 reveals the children's performance on the comprehension questions of the base stories.

TABLE 5

MEANS AND STANDARD DEVIATIONS ON COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS FOR FOUR STAGES AS DETERMINED BY BASE PASSAGES

	2	3	4	5	TOTAL
Mean	11.00	16.40	22.17	26.94	20.35
Standard Deviation	8.52	12.30	6.79	3.70	9.58
Number of Subjects	12	4	7	16	N=39

The same pattern emerged as for the relationship between scores on the Gates-MacGinitie test. Children in stage 2 scored lowest while children in each succeeding stage scored higher.

A one-way analysis of variance was calculated to determine if there were any significant differences between the children's performance on the comprehension questions over the four stages. Table 6 indicates that the difference between stages is significant at the .01 level.

The Scheffé test was calculated to determine where the difference between performance on the comprehension task existed. Table 7 indicates that three of the stages were significantly different in terms of the children's performance on the comprehension questions. Children in stage 2 were significantly different from children in stage 4 and stage 5 at the .05 level. Likewise children in stage 3 differed significantly from children in stage 5 also. Thus, it would seem that the children in the lowest stages, 2 and 3, perform significantly different from their classmates who are placed at least two stages above them.

TABLE 6

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY BASE PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	1798.00	599.33	3	11.78**
Within Means	1780.98	50.89	35	

**Significant at the .01 level

TABLE 7

THE SCHEFFÉ COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY BASE PASSAGES

	2	3	4	5
2		NS	*	*
3			NS	*
4				NS
5				

*Significant at 0.05 level

NS-Not Significant

Since children were placed in stages on the number and type of miscues, results also indicate a relationship between miscues and reading comprehension. As expected those children with most non-responses scored lowest on comprehension while those children whose miscues were mainly graphically and semantically or syntactically acceptable scored highest on the comprehension questions.

Reading Achievement - Three Stages (2, 3 - 4, 5)

Because of the small number of students in stages 3 and 4 (four and seven respectively) it was decided to conflate these two stages into one for further statistical analysis. When conflated to three stages, the new stage 3 - 4 still contained the least number of children. Table 8 summarizes the results of the reading achievement scores for the children in each stage.

TABLE 8

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS FOR THREE STAGES AS DETERMINED BY BASE PASSAGES

	2	3 - 4	5	TOTAL
Mean	14.45	17.72	24.41	19.71
Standard Deviation	5.04	7.47	5.23	7.11
Number of Subjects	12	11	16	N=39

Children in stage 2 scored the lowest with children in succeeding stages scoring higher. The results of the analysis of variance computed to determine if significant differences now existed between reading achievement scores of the various stages are shown in Table 9. Differences between stages were significant at the .01 level.

TABLE 9

SUMMARY OF ANALYSIS OF VARIANCE ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY BASE PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	722.87	361.43	2	10.40**
Within Means	1251.03	34.75	36	

**Significant at the .01 level

The results of the Scheffé test, comparison of means are shown in Table 10, and indicate that the differences between stage 5 and stage 2 and stage 5 and 3 - 4 are significant. It would appear that the performance of children in stage 3 - 4 are more like their peers in the stage at the lower end of the continuum than they are like their peers in the topmost stage.

Comprehension Questions - Three Stages

To further determine if stages in reading were consistent with performance on the comprehension questions, the means and standard deviations of the childrens' performances in comprehension were calculated and are shown in Table 11. The data in this table continued to support

the hypothesis that children in stage 2 scored lowest while children in succeeding stages scored higher.

TABLE 10

THE SCHEFFÉ COMPARISON OF MEANS ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY BASE PASSAGES

	2	3 - 4	5
2		NS	**
3 - 4			*
5			

*Significant at the 0.05 level

**Significant at the 0.01 level

NS-Not Significant

TABLE 11

MEANS AND STANDARD DEVIATIONS ON COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS FOR THE THREE STAGES AS DETERMINED BY BASE PASSAGES

	2	3 - 4	5	TOTAL
Mean	11.00	19.54	26.94	20.36
Standard Deviation	8.52	9.63	3.70	9.58
Number of Subjects	12	11	16	N=39

An analysis of variance (Table 12) indicates that differences between the stages on the comprehension scores were significant at the .01 level.

TABLE 12

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY BASE PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	1707.30	853.65	2	16.42**
Within Means	1871.67	51.99	36	

**Significant at the .01 level

The Scheffé test comparison of means (Table 13) showed that each stage differed significantly from the other in terms of comprehensive scores.

When the base passages are used as the criterion for analysis regardless of whether the children are grouped into three or four stages, it is evident that the most significant differences existed between children in stage 2 and children in stage 5. The children in the intermediate stage(s) sometimes performed significantly different from their classmates at either end of the continuum. More differences were apparent when comprehension scores on the Diagnostic Reading Scales, rather than reading achievement scores on the Gates-MacGinitie Test, were analyzed.

TABLE 13

THE SCHEFFÉ COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY BASE PASSAGES

	2	3 - 4	5
2		*	**
3 - 4			*
5			

*Significant at 0.05 level

**Significant at 0.01 level

II. STAGES OF LEARNING TO READ AS DETERMINED BY THE CEILING PASSAGES

Reading Achievement - Four Stages

The child's ceiling was established after the child read the base passages. More than eight errors on the fifth base passage meant the oral reading was discontinued; otherwise the child continued to read until he exceeded the number of miscues per passage as determined by the test author. In some cases the child had reached his ceiling on an earlier passage than five, but all were encouraged to continue through passage five. The total number and types of miscues made by the child were calculated up to and including the ceiling passage, and the child was placed in a stage as outlined in Chapter 3. The sample was distributed into four stages. As there were no children in stage 1, it has been omitted from the table. The means and standard deviations on the Gates-MacGinitie Reading Test and the number of children per cell are

shown in Table 14.

TABLE 14

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS FOR THE FOUR STAGES AS DETERMINED BY CEILING PASSAGES

	2	3	4	5	TOTAL
Mean	14.15	22.50	21.81	24.00	19.97
Standard Deviation	6.39	6.92	7.21	4.08	7.21
Number of Subjects	13	6	10	11	N=40

Children in stage 2 scored the lowest, and children in stage 5 scored the highest. However, children in stage 3 scored higher than children in stage 4. This may be partly explained by the relatively few children (six) in stage 3 and the smaller standard deviation of their scores.

The results of a one way analysis of variance computed to determine if significant differences existed between the stages on the reading achievement scores are shown in Table 15. Differences were significant at the .01 level.

To indicate where the difference between stages and reading achievement existed, the Scheffé test was computed. Table 16 reveals which stages are significantly different from each other.

TABLE 15

SUMMARY OF ANALYSIS OF VARIANCE ON READING ACHIEVEMENT OVER FOUR STAGES AS DETERMINED BY CEILING PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	678.14	226.05	3	5.82**
Within Means	1398.83	38.86	36	

**Significant at the .01 level

TABLE 16

THE SCHEFFÉ COMPARISON OF MEANS ON READING ACHIEVEMENT OVER FOUR STAGES AS DETERMINED BY CEILING PASSAGES

	2	3	4	5
2		NS	*	**
3			NS	NS
4				NS
5				

*Significant at the 0.05 level

**Significant at the 0.01 level

NS-Not Significant

Results of the Scheffé test showed that stage 2 differed from stage 4 and stage 5. Although the mean scores of stage 3 were slightly

higher than in stage 4, they did not differ significantly from the mean scores of the children in stage 2. The lack of significant differences between these stages appears to be due to the smaller number of subjects in stage 3.

Comprehension Questions - Four Stages

To further indicate that different stages meant different performances on the part of grade one children, the means and standard deviations of the comprehension scores for the children were calculated. The results are shown in Table 17. Children in stage 2 scored the lowest on this task whereas children in stage 5 scored the highest. However, as in the case of the Gates-MacGinitie achievement scores children in stage 3 scored higher than children in stage 4.

TABLE 17

MEANS AND STANDARD DEVIATIONS ON THE COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS FOR FOUR STAGES AS DETERMINED BY CEILING PASSAGES

	2	3	4	5	TOTAL
Mean	8.15	31.83	31.00	34.30	24.53
Standard Deviation	11.93	15.94	15.07	12.59	17.25
Number of Subjects	13	6	11	10	N=40

To determine if the comprehension scores differed significantly within the stages an analysis of variance was conducted. The data are shown in Table 18 and indicate that differences between stages were

significant at the .01 level.

TABLE 18

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY CEILING PASSAGES

Source of Variance	Sum of Squares	Variance Estimates	df	F
Among Means	5221.34	1740.45	3	9.38**
Within Means	6678.63	185.52	36	

**Significant at the .01 level

The results of the Scheffé test of multiple comparisons of means (Table 19) was computed to determine where the differences between stages existed. Children's comprehension scores in stage 2 differed significantly from those in stage 3, stage 4 and stage 5 ($p < .01$ in all cases). These data are unlike those when the scores are analysed using the base passage criterion. Here, stage 2 children or children at the lower end of the scale tend to be most different from the peers at the the upper levels (stages 3, 4, 5) who seem to perform somewhat similarly. When the base passages were used as the criterion of analysis, children in stage 3 tended to group with their classmates in stage 2 in terms of their performance on the comprehension scores.

TABLE 19

THE SCHEFFÉ COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY CEILING PASSAGES

	2	3	4	5
2		**	**	**
3			NS	NS
4				NS
5				

**Significant at the .01 level

NS-Not Significant

Reading Achievement - Three Stages (2, 3 - 4, 5)

Because there were few children in stage 3 (six) and because they scored higher than those children in stage 4 it was decided to group the children in stages 3 and 4 for further analysis. Table 20 summarizes the means and stardard deviations in the reading achievement task and the number of children per cell.

The results of a one way analysis of variance (Table 21) reveal that the difference between the stages on the reading achievement task is significant at the .01 level. When the data from stages 3 and 4 are grouped, the mean for each succeeding stage is higher than the stage preceding it.

TABLE 20

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

	2	3 - 4	5	TOTAL
Mean	14.15	22.06	24.00	19.97
Standard Deviation	6.39	6.89	4.08	7.21
Number of Subjects	13	17	10	N=40

TABLE 21

SUMMARY OF ANALYSIS OF VARIANCE ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	676.14	338.17	2	8.93**
Within Means	1400.67	37.86	37	

**Significant at the .01 level

In order to determine between what specific stages there was a difference, the Scheffé test was computed. The data are shown in Table 22. Children in stage 2 were significantly different from children in stage 3 - 4 ($p < .01$) and children in stage 2 also differed significantly from children in stage 5 on their reading achievement scores ($p < .01$).

TABLE 22

THE SCHEFFÉ COMPARISON OF MEANS ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

	2	3 - 4	5
2		**	**
3 - 4			NS
5			

**Significant at the 0.01 level

NS-Not Significant

Comprehension Questions - Three Stages (2, 3 - 4, 5)

The means and standard deviations and the number of children per cell for the comprehension questions are displayed in Table 23. The trend of scores was similar for the Gates-MacGinitie reading achievement scores with children in stage 2 scoring the lowest and children in succeeding stages scoring higher.

The results of the analysis of variance, computed to determine if significant differences now existed are shown in Table 24. Differences between stages were significant at the .01 level.

TABLE 23

MEANS AND STANDARD DEVIATIONS ON COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

	2	3 - 4	5	TOTAL
Mean	8.15	31.29	34.30	24.53
Standard Deviation	11.93	14.89	12.59	17.25
Number of Subjects	13	17	10	N=40

TABLE 24

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	5218.64	2609.32	2	14.45**
Within Means	6681.33	180.58	37	

**Significant at the .01 level

The results of the Scheffé test, see Table 25, show that the difference between children in stage 2 and children in stage 3 - 4 is significant at the .01 level as is also the difference in the comprehension scores between children in stage 2 and those in stage 5.

TABLE 25

THE SCHEFFE COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY CEILING PASSAGES

	2	3 - 4	5
2		**	**
3 - 4			NS
5			

**Significant at the 0.01 level

NS-Not Significant

The results of the analysis indicate that there is a difference with childrens' performances depending on which analysis is adopted. For example, children in the lower stages (2 and 3) appear more homogeneous on their reading achievement scores when the stages are determined by the base passages, while the upper stages (4 and 5) appear more homogeneous when the ceiling criterion is applied. The children in the upperm st stage score extremely well on the five passage base but when they are allowed to reach their ceiling, they tend to go over their depth and struggle with words at a much higher grade level than grade two, and consequently reduce their mean, and thus do not appear that different from children in a lower grade. However, regardless of the criterion used children in stage 2 are low and perform significantly different from their peers in the upper stages in either reading achievement or comprehension.

III. STAGES OF LEARNING TO READ AS DETERMINED BY BIEMILLER'S 12 PER CENT CRITERION

Reading Achievement - Four Stages

When Biemiller (1969) conducted his study of grade one children he used a 12 per cent criterion to determine the cut-off point for the passages the children were asked to read. That is, when a child's miscues totalled 12 per cent of the number of words in the passage, the reading was discontinued. This study also used the 12 per cent criterion to determine if the findings of tests given during a single occasion paralleled the findings of Biemiller who observed children over an eight month period. The results of 12 per cent analysis were compared with the base and ceiling results of this study.

The means and standard deviations and the number of subjects per cell on the Gates-MacGinitie Reading Test over four stages are shown in Table 26. Regardless of the criterion for analysis, children in stage 2 score the lowest on the reading achievement task, and this was evident in this analysis using the 12 per cent criterion. Unlike the other two criteria, however, children in stage 4 scored marginally higher than children in stage 5. When distributed over four stages, the ends of the continuum, stage 2 and stage 5, contained the most children. A one-way analysis of variance was conducted to determine if there were any significant differences between the children's reading achievement scores over four stages. Table 27 reveals that the difference between stages was not significant.

TABLE 26

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS OVER FOUR STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3	4	5	TOTAL
Means	14.80	20.00	22.55	22.33	19.97
Standard Deviation	6.55	8.40	7.20	5.38	7.21
Number of Subjects	10	9	9	12	N=40

TABLE 27

SUMMARY OF ANALYSIS OF VARIANCE ON READING ACHIEVEMENT OVER FOUR STAGES AS DETERMINED BY 12 PER CENT CRITERION

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	394.48	131.49	3	2.81NS
Within Means	1682.49	46.74	36	

NS-Not Significant

Although the 12 per cent criterion and the ceiling level were similar in that they indicated a cut-off point when the number of miscues are proportionate to the number of words in the passage, differences between stages existed for the latter and not for the former. A possible explanation lies in the actual number of miscues permitted under each

criterion. For the first four passages, more miscues are allowed under the ceiling level than under the 12 per cent criterion. For example, when the ceiling level is used, a child may make eight miscues on passage one and be allowed to continue, whereas under the 12 per cent criterion he would be stopped if he made three errors. For passages five and six, the number of miscues is approximately equal for both criteria and for passage seven and beyond, more miscues are permitted under the 12 per cent as compared to the ceiling level. Thus it appears that under the 12 per cent criterion the lower readers were stopped very early. Because the words in passage one and two were very simple, they were possible sight words and the miscues made on such easy passages were usually semantic or syntactic. A preponderance of these errors usually meant allocating a child to a higher stage. On the other hand, the higher readers easily read the first several passages and continued into much higher passages. Some children, for example, read to passage ten. Because many of the words in those passages were far beyond a grade two level, the children's general reaction was no response and when the miscues were analyzed, a majority of non-response type errors placed the child in stage 2. This explanation would be supported by Biemiller (1969) in that he found that more able readers tended to revert to lower levels of processing information when encountering more difficult material.

Comprehension Questions - Four Stages

The children's performance on the comprehension questions over the four stages was also analyzed. The means and standard deviations of the comprehension and the number of students per cell for stages 2 to 5 are summarized in Table 28. According to the data, the children in stage 2 scored the lowest on the comprehension questions with the children in

each succeeding stage scoring higher.

TABLE 28

MEANS AND STANDARD DEVIATIONS ON COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS OVER FOUR STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3	4	5	TOTAL
Means	7.70	23.00	30.67	29.75	22.93
Standard Deviations	11.77	19.93	16.69	16.53	18.08
Number of Subjects	10	9	9	12	N=40

The results of a one way analysis of variance, computed to determine if significant differences existed between the stages on the comprehension scores, are shown in Table 29. Differences between stages were significant at the .01 level.

TABLE 29

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY 12 PER CENT CRITERION

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	3416.43	1138.81	3	4.25**
Within Means	9656.35	268.23	36	

**Significant at the .01 level

Results of the Scheffé test comparison of means are shown in Table 30. A significant difference does exist between stage 2 and stage 4 as well as between stage 2 and stage 5 (at the .05 level in both cases). Thus when using the 12 per cent criterion and four stages, even though there were no significant differences in reading achievement, there were differences between the comprehension scores within the stages.

TABLE 30

THE SCHEFFÉ COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER FOUR STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3	4	5
2		NS	*	*
3			NS	NS
4				NS
5				

*Significant at the 0.05 level

NS-Not Significant

Reading Achievement - Three Stages (2, 3 - 4, 5)

Because of the low number of children in stage 3 and stage 4 (nine in each stage), these two stages were conflated for further statistical analysis. In considering only three stages, the children in stage 2 scored the lowest in reading achievement while children in each succeeding stage scored higher. Children in stage 5 score the highest, as the

data in Table 31 show.

TABLE 31

MEANS AND STANDARD DEVIATIONS ON READING ACHIEVEMENT AND NUMBER OF SUBJECTS OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3 - 4	5	TOTAL
Means	14.80	21.28	22.33	19.97
Standard Deviations	6.55	7.70	5.38	7.21
Number of Subjects	10	18	12	N=40

An analysis of variance reveals that there were significant differences between the reading achievement scores of stages using the 12 per cent criterion. Table 32 reveals that this difference is significant at the .05 level.

TABLE 32

SUMMARY OF ANALYSIS OF VARIANCE ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

Source of Variance	Sum of Squares	Variance Estimates	df	F
Among Means	365.09	182.55	2	3.95*
Within Means	1711.88	46.27	37	

*Significant at the .05 level

The results of the Scheffé test of multiple comparison of means (Table 33) indicate that there is a significant difference between children's reading achievement in stage 2 and stage 5 at the .05 level.

TABLE 33

THE SCHEFFÉ COMPARISON OF MEANS ON READING ACHIEVEMENT OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3 - 4	5
2		NS	*
3 - 4			NS
5			

*Significant at the 0.05 level

NS-Not Significant

Comprehension Questions - Three Stages (2, 3 - 4, 5)

The children's comprehension scores using the 12 per cent criterion were then analyzed. Table 34 indicates that the children in stage 2 scored the lowest and children in each succeeding stage scored higher which is similar to the results on the Gates-MacGinitie test.

An analysis of variance revealed that there was a significant difference ($p < .01$) between children's performances on the comprehension questions by stages according to the 12 per cent criterion (Table 35) and the results of the Scheffé test of multiple comparison of means (Table 36) reveal that differences are between children in stage 2 and stage 3 - 4 and between children in stage 2 and stage 5.

TABLE 34

MEANS AND STANDARD DEVIATIONS ON COMPREHENSION QUESTIONS AND NUMBER OF SUBJECTS OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3 - 4	5	TOTAL
Mean	7.70	26.83	29.75	22.93
Standard Deviations	11.77	18.26	16.52	18.08
Number of Subjects	10	18	12	N=40

TABLE 35

SUMMARY OF ANALYSIS OF VARIANCE ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

Source of Variance	Sum of Squares	Variance Estimate	df	F
Among Means	3151.92	1575.96	2	5.88**
Within Means	9920.85	268.13	37	

**Significant at the .01 level

TABLE 36

THE SCHEFFÉ COMPARISON OF MEANS ON COMPREHENSION QUESTIONS OVER THREE STAGES AS DETERMINED BY 12 PER CENT CRITERION

	2	3 - 4	5
2		*	*
3 - 4			NS
5			

**Significant at the 0.05 level

NS-Not Significant

When compared with the base and ceiling criterion, it would appear that the 12 per cent criterion is less successful in discriminating between stages when both reading achievement and comprehension scores are analyzed.

Although this study differed from Biemiller's study in a number of ways it is possible to make some comparisons. It is first necessary, however, to mention certain aspects of Biemiller's study which are different from this study. His study was a longitudinal study of eight months duration in which he indicated that the higher readers during that time passed through a series of three stages in learning to read. Biemiller used a 12 per cent criterion to determine the child's cut-off point for the passages on which he analyzed the miscue data. Biemiller's unit of language analysis for determining grammatical acceptability of the

responses was the preceding context up to and including the miscue. This study used the preceding and succeeding context at the phrase level as the unit of analysis.

The focal point of the Biemiller study was the Non-response stage which occurred when 50 per cent of a child's miscues were of the non-response type. The non-response was stage 2 in Biemiller's sequence of stages. Children who had not reached this stage were automatically in stage 1 and children who had moved beyond it were in stage 3 which was defined as the two consecutive months in which less than 50 per cent of the child's miscues were of the non-response type. Biemiller used the Metropolitan Reading Achievement Test as the independent variable for his study and which he used to determine if differences existed between stages.

In this study the child's Non-response stage appeared to be similar to Biemiller's. This experimenter allowed the child a maximum of ten seconds to respond before a miscue was termed a Non-response. It is not clear if Biemiller used a time limit for this type of miscue. As this study involved a single testing session, it was not possible to determine if students actually passed through stages as indicated in Biemiller's longitudinal study but it appears that stages can be pinpointed during a single testing period. This experimenter hypothesized five stages but observed only four (there were no children in stage 1). This may be accounted for because of the time of year in which the study occurred. However, Biemiller did find that of the forty-two children in his study three children were in the first stage at a similar time of year. Biemiller noted that sixteen percent of his sample was in the second stage as compared to twenty-five percent in this study. Pupils beyond the second stage accounted for seventy-six percent of Biemiller's sample in

contrast to the seventy-five percent noted in this study. Biemiller did not find any differences in reading achievement between the two stages beyond the Non-response stage and conflated those into one. For the present study three stages had been indicated as possibly existing beyond the Non-response stage. However, regardless of whether the ceiling or 12 per cent criterion was used as the basis of analysis no significant differences existed between any of the stages beyond the Non-response stage which lends support to Biemiller's findings that perhaps only one distinct stage exists beyond the Non-response stage. When the base level was used, significant differences however, were found between the conflated stages 3 - 4 and stage 5. In this study, the Gates-MacGinitie Reading Test was the independent variable which was used to determine if significant differences existed between the stages.

IV. TEACHERS' RATINGS AND PLACEMENT IN STAGES AS DETERMINED BY BASE, CEILING AND 12 PER CENT CRITERIA PASSAGES

Research has shown that teachers' ratings of beginning readers are as valid as readiness tests in terms of predicting reading achievement (Kermonian, 1962; Henig, 1949; Kottemeyer, 1947). Kottemeyer (1947) found that teachers with more than ten years experience were more able to determine a child's reading achievement than teachers with less than ten years experience.

The teachers involved in this study were asked to rate their childrens' reading achievement on a five point scale as discussed in Chapter 3.

The data in Table 37 revealed that placing the children into stages, based on either the base, ceiling or 12 per cent miscue criterion is significantly correlated with the teacher's rating of their children.

TABLE 37

CORRELATIONS BETWEEN TEACHERS' RATINGS AND STAGES AS DETERMINED BY MISCUE CRITERIA

	Base	Ceiling	12 Per Cent
Teachers' Ratings	.45**	.38*	.35*

**Significant at the .01 level

*Significant at the .05 level

The correlation between the teachers' ratings and the placement of children into stages according to the base passages reached the .01 level of significance while the correlations between the teachers' ratings and the placement of children into stages based on the ceiling and 12 per cent passages were significant at the .05 level.

Results tend to corroborate the findings of studies such as Kermonian (1962), Henig (1949) and Kottemeyer (1947). Teachers are able to accurately rate the reading achievement level of their grade one pupils.

Information on ratings of teachers with different years of experience was obtained by noting the percentage of children placed into stages on the basis of the three miscue criteria and the correspondence of these placements with teachers' ratings. Table 41, Appendix A shows that for the teachers who possessed ten or more years of experience approximately eight per cent of the children were placed in level one,

sixteen per cent in level two, forty-nine per cent in level three, eight per cent in both level four and level five.* In comparison those teachers with less than ten years experience placed no children in level one, fourteen per cent in level two, and twenty-eight per cent in levels three, four and five. Level 2 appeared to be the level in which the more experienced and the less experienced teachers' ratings agreed most closely. For levels three, four and five the less experienced teachers placed twenty-eight per cent of their children in each of these three stages. The more experienced teacher, on the other hand, tended to rate their children predominantly in about level 3 (forty-nine per cent) as compared to about eight per cent in each of the two higher levels. Generally the experienced teachers tended to rate their children more toward the average while the less experienced teachers appeared to place equal numbers of children at the upper levels. This generalization appears to hold for either the base, ceiling or 12 per cent criterion.

A second informal analysis was conducted to detect discrepancies between placement of children into stages using the three miscue criteria and the teacher ratings when number of years teaching experience is considered. The children's identification number for the study was placed in the cell that corresponded with the miscue rating and the teacher's rating for that particular child. In an examination of the data (Table 42 and Table 43, Appendix A) to detect any discrepancies between placement in stages using the miscue criteria and teachers' ratings, it is evident that

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*The levels on the five point scale and the five stages of beginning reading discussed in this study are not in a one to one relationship but do correspond in terms of a hierarchy of reading achievement.

the analysis using the base passages revealed the least differences.

As the statistical analysis between achievement scores indicated, it was often very difficult to differentiate between the middle stages so a discrepancy of one stage between stage placement by miscue criteria and teacher ratings was not considered to be serious. A discrepancy of two stages was deemed to indicate more disagreement. On the base passages, there were two children whose placement differed by two levels between miscue criteria and the more experienced teachers' ratings. For the less experienced teachers, there were five children whose placement on the criteria differed by two levels. On the ceiling passages, there was one child whose placement differed by two levels between miscue criteria and the more experienced teachers' ratings while there was disagreement on six children between miscue criteria and the less experienced teachers' ratings. On the 12 per cent passage, there were three children whose placement by the more experienced teachers' ratings and miscue criteria differed by two levels as compared to seven for the less experienced teachers.

It would appear that the teachers' ratings and the miscue criteria differ least for the more experienced teacher. The number of cases in which there is a mismatch of two levels is least for the base passages which corroborates with the significant correlation ($p < .01$) between teacher ratings and miscue placement.

V. IMPLICATIONS OF DIFFERENT STAGE-PLACEMENT CRITERIA

This study is considered an extension of Biemiller's (1969) study, yet whereas he used a 12 per cent criterion to place beginning readers into stages, this study also used a base and ceiling level. During

the pilot study it became obvious that the 12 per cent criterion penalized the high reader, whose errors although then were very few, tended to be of the non-response type. This seemed to be because these students attempted more and more difficult passages and were meeting words far beyond their grade level and to which they did not respond. Since the criterion for placing students in stage 2 was 50 per cent of non-response errors, if these students made five errors and three were of the non-response type, they would be placed in stage 2. This was not consistent with their teacher's rating. The ceiling level, although initially somewhat more lenient in terms of the number of miscues permitted per passage (since to reach the ceiling level the number of responses would be approximately seventeen per cent of the words in the passage), produced similar limitations in terms of penalizing the high reader. The base level seemed most fair to all, although the low readers experienced some difficulty with the upper passages of the base, and they needed encouragement to continue through the fifth passage.

The five passages, which constituted the base, were selected for all children to read because the mean grade level for the reading achievement test scores of the sample was grade 2.1. The degree of difficulty of the fifth base passage corresponded closely to a grade level which resembled this mean. Thus the base passages were considered to be appropriate for most children, yet it would provide a range of difficulty with some children reading less than five passages and some children reading more.

Observations during the main study were very similar to those of the pilot study. The more advanced readers read from three to five passages above the base level while many of the lower readers were

obviously beyond their level by the fifth passage. The differences between stages using the base, ceiling and 12 per cent criteria, and either the four or three stage distribution are shown in Tables 38 and 39.

TABLE 38

SUMMARY OF SIGNIFICANT DIFFERENCES BETWEEN FOUR STAGES ON READING ACHIEVEMENT AND COMPREHENSION AS DETERMINED BY BASE, CEILING AND 12 PER CENT CRITERIA

	Differences Between Stages on Reading Achievement						Difference Between Stages on Comprehension					
	2-3	2-4	2-5	3-4	3-5	4-5	2-3	2-4	2-5	3-4	3-5	4-5
Base			**				**	*	**		*	
Ceiling		*	**					**	**			
12 Per Cent								*	*			

*Significant at the .05 level

**Significant at the .01 level

TABLE 39

SUMMARY OF SIGNIFICANT DIFFERENCES BETWEEN THREE STAGES ON READING ACHIEVEMENT AND COMPREHENSION AS DETERMINED BY BASE, CEILING AND 12 PER CENT CRITERIA

	Differences Between Stages on Reading Achievement			Differences Between Stages on Comprehension		
	2-(3-4)	2-5	(3-4)-5	2-(3-4)	2-5	(3-4)-5
Base		**	*	*	**	*
Ceiling	**	**		**	**	
12 Per Cent		*		*	*	

*Significant at the .05 level

**Significant at the .01 level

It is obvious from the data of the tables that the ceiling level criterion best discriminates between stages as identified for this study. Since there were never any significant differences between stage 3 - 4, it may be better to consider these as a single stage for further research purposes. When the children were assigned to three stages, more significant differences were apparent between comprehension scores for the base than for the ceiling criterion. Since the comprehension scores are not independent of the miscues by which children were assigned to stages, it is best to use the Gates-MacGinitie scores (the independent variable) to evaluate the better criterion for stage placement. It is on this measure that the ceiling level is obviously the better criterion to use in miscue analysis for the purpose of placing children into stages of beginning reading.

VI. AN ANALYSIS OF GRAPHIC AND SYNTACTIC MISCUES OF HIGH AND LOW READERS

In Chapter 2, several studies were reviewed with regard to the use of syntactic and graphic information which children use when they first learn to read. The research indicated that when children begin to read their responses to unknown words tend to be dominated by their knowledge of the syntax of oral language (Y. Goodman, 1967; Clay, 1968; Shandling, 1970). More specifically, Weber (1970) and Coomber (1972) indicated there was no difference between high and low readers in terms of processing the syntactic information using the preceding context. However, both of these researchers found significant differences between high and low readers in the processing of graphic information. The oral reading responses to an unknown word for high readers shared more

graphic features with the stimulus word than the responses of low readers.

To determine if the findings that were reviewed in Chapter 2 were evident in this study, the sample of forty children was divided into high and low readers using the mean on the Gates-MacGinitie Reading Test. The high and low readers' use of syntactic and graphic information while reading is summarized in Table 40.

TABLE 40.

PERCENTAGE OF SYNTACTICALLY ACCEPTABLE AND GRAPHICALLY SIMILAR MISCUES OF HIGH AND LOW READERS

		HIGH READERS (Per Cent)	LOW READERS (Per Cent)
SYNTACTIC INFORMATION	Pre-Phrase Level	30	30.5
	Post-Phrase Level	22.7	20
GRAPHIC INFORMATION		47.6	50.1

The results indicate that the differences between the high and low readers' use of syntactic information at the pre-phrase level is negligible which is similar to the findings of the studies reviewed in Chapter 2. More of the high readers' miscues were grammatically acceptable with the post-phrase, however, than were those of the low readers. In this study, the low readers appeared to make more use of graphic information than did high readers. This finding is in disagreement with Weber (1970) in that the low readers of this study surpassed the high readers in their use of graphic information. It must be remembered, however, that the graphic miscues are analyzed independently of the other miscue types and if the graphic miscues were considered in terms of the number of semantically and/or syntactically acceptable miscues, the data may have revealed different results.

V. SUMMARY OF FINDINGS

1. There were no children in stage 1 regardless of whether the base, ceiling or 12 per cent criterion was used to determine the cut-off point for analysis of miscues.

2. Distinct stages of beginning reading achievement could be identified using the base and ceiling levels.

3. Stages were not distinct with regard to reading achievement scores when the 12 per cent criterion was used.

4. Regardless of the criterion, stages were distinct on the comprehension scores.

5. The teachers' ratings corresponded significantly with the placement into stages using any of the three criterion (base, ceiling, 12 per cent).

6. Teachers with more than ten years experience seemed more accurate in their assessment of their childrens' reading achievement.

7. Stage 3 and stage 4 did not differ throughout the study, and for further research or instructional purposes, these two stages may best be considered as one.

8. When miscues were analyzed on the passages determined by the ceiling criterion, more differences were significant between stages than when the base or 12 per cent criterion was used to determine the passages for miscue analysis.

9. When comparing high and low readers' use of syntax at the post-phrase level, the high readers excelled in using this portion of context but did not differ in their use of pre-phrase material.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

I. SUMMARY

The major purpose of this study was to investigate the possibility of using oral reading miscues during one testing session to place beginning readers into stages based on a base, ceiling and 12 per cent level. Five grade one classes in four schools in the Edmonton Separate School System constituted the sample population and were administered the Gates-MacGinitie Reading Test Primary A Form 2 to ensure a range of high, average and low readers in selecting the sample. The grade one population was also administered the Lorge-Thorndike Intelligence Test to ensure that the low readers to be chosen were not hindered in their attempts to read by low intelligence. The sample of forty children was obtained by using one half standard deviation intervals above and below the mean on the reading achievement scores. The sample was then administered the visual screening test using the Keystone telebinocular. Cumulative records of the sample were checked to ensure that the sample possessed adequate hearing.

Once the sample was selected, each child was asked to read aloud a number of stories from the Diagnostic Reading Scales. The child's miscues were analyzed, and the child was placed into a stage depending on the number and types of miscues observed. After all the sample had been placed into stages, their performance on a reading achievement test and a comprehension task were compared with their peers' performances in the other stages.

A one-way analysis of variance was computed to determine if stages were distinct in terms of statistically different performances. The Scheffé test of comparison of means was then calculated to ascertain between which stages the performance on the two tasks differed.

Since research has shown that grade one teachers' perceptions of their childreng' reading achievement is a valid prediction of future success in reading, the five teachers involved in the study were asked to rate their students on a five-point scale. Correlation coefficients were calculated to determine the relationships between the placement into stages using the miscue criterion and the teachers' perceptions of these children as achievers in reading.

Each of the hypotheses formulated in connection with this study and with their rejection or non-rejection data is found on the following pages.

II. MAIN FINDINGS

Hypothesis 1.

Statement: There is no significant difference between the reading achievement scores of children placed into various stages as determined by analysis of their oral reading miscues on the base passages.

This hypothesis was rejected when students were allocated either to four stages or three stages on the basis of the analysis of their oral reading miscues. Differences between stages for each grouping were significant at the .01 level.

Discussion

The data for this hypothesis indicate that it is possible to group students into distinct stages of reading achievement on

the basis of miscues they make while reading orally. When the students were grouped into four stages, significant differences ($p. < .01$) were noted between stage 2 and stage 5. (No students in the study were assigned to stage 1 on the basis of the miscues analysed). Because of the small number of students in stage 3, and stage 4, they were grouped for further analysis. Results showed that with a three stage arrangement of the miscue data, differences between stage 2 and stage 5 reached the .01 level of significance. Although the mean reading achievement scores tended to increase sequentially over the stages, the distinctness of scores was evident only for the stages at the extremeties of the continuum.

Hypothesis 2

Statement: There is no significant difference between the performance on the comprehension questions of children placed into various stages as determined by analysis of their oral reading miscues on the base passages.

The hypothesis was rejected when the children were placed into either the four or three stage distribution. The differences between the stages for each grouping reached the .01 level of significance.

Discussion

The data obtained from the base passages indicated that the children at each end of the continuum were distinctly different from each other. Using either the four or three stages, children in stage 2 were significantly different from children in stage 5 at .01 level on the comprehension scores. Using the base criterion, it would appear that the children at the upper end of the continuum are similar since stage 4 was also different from stage 2 at the .05 level. When reduced to three stages, because of insufficient numbers

in stage 3 and 4, only the children in stage 2 and stage 5 continued to be distinct ($p < .01$).

The comprehension questions were asked on the same passages from which the miscue data was obtained to place children in stages. Since those children scoring high on the comprehension questions were generally allocated to the upper stages and those scoring low were assigned to the lower stages, it appears that there is a relationship between the number and types of miscues a child makes when reading orally and the degree of comprehension he derives from what he has read.

Hypothesis 3

Statement: There is no significant difference between the reading achievement scores of children placed into various stages as determined by analysis of their oral reading miscues on the ceiling passages.

On the basis of this criterion, the hypothesis was rejected as the differences between the stages were significant at the .01 level regardless of whether the sample was grouped into four or three stages.

Discussion

Children at the upper end of the continuum (stage 4 and stage 5) continued to score significantly higher on reading achievement than the children at the lower end of the scale when miscue data were analysed on the ceiling passages. The scores of students in stage 2 were significantly different at the .01 level from those in stage 5 using both the four and three stage grouping. The differences between scores in stage 4 and stage 2 were significant at the .05 level. As there were insufficient numbers of children in stage 3, that stage and stage 4 were grouped together because of similar

means on the reading achievement test. On the basis of three stages the children at the upper end of the continuum, now stage 3-4 and stage 5 were significantly different from their counterparts in stage 2 ($p < .01$). Thus it would appear that the ceiling passages discriminate between those children in stage 2, who are still over-attending to the graphic feature of words, from their peers who have moved to later stages in beginning reading.

Hypothesis 4

Statement: There is no significant difference between the performance on the comprehension questions of children placed into various stages as determined by analysis of their oral reading miscues on the ceiling passages.

This hypothesis was rejected as the difference between the stages reached the .01 level, irrespective of the four or three stage distribution when the childrens' miscues were analyzed using ceiling criterion.

Discussion

As mentioned in the introduction to this study, a child's comprehension of the story he reads is one way to measure the "product" of the reading process. This study, particularly using the ceiling passages, provides statistical evidence for Cromer and Wiener's (1966) contention that identification is an antecedent to comprehension. Those children in stage 2 scored significantly lower than their peers in the other stages, regardless of whether the children were grouped into four stages or three stages. The difference was significant at the .01 level in all instances. Thus those children who had moved beyond stage 2, had begun to focus more on meaning and surpassed their classmates who still remained in stage 2 on the comprehension task. This finding is consistent with the results of Biemiller's observations. He noted that the earlier in the

year children moved out of stage 2, the higher they achieved in reading at the end of the school year.

Hypothesis 5

Statement: There is no significant difference between the reading achievement scores of children placed into various stages as determined by analysis of their oral reading miscues on the 12 per cent criterion passages.

This hypothesis was partially rejected as differences significant at the .05 level were revealed when the subjects were grouped into three stages. No differences, however, were found between stages in the four-stage grouping.

Discussion

The 12 per cent passages were unable to discriminate between any of the four stages on the reading achievement test. As indicated in Chapter Four, this may be explained by the fact that as the higher readers encountered more and more difficult material for their grade level, their miscues, although these were few, tended to be of the non-response or graphically similar type. If these miscues totalled more than 50 per cent of the total number of errors, the child was placed in stage 2 or stage 3. There were four children in the study who were placed in stage 5 on the base criterion, but when reading more difficult material, they reverted to either stage 2 or stage 3 on the basis of the number and types of miscues. When stage 3 and stage 4 were conflated the only significant difference that existed between those children were for stages at each end of the continuum (stage 2 and stage 5). This difference reached the .05 level of significance.

Hypothesis 6

Statement: There is no significant difference between the performance on the comprehension questions of children placed into various stages as determined by analysis of their oral reading miscues on the 12 per cent criterion passages.

This hypothesis was rejected as the difference in the comprehension scores for either the four or three stage grouping, was significant at the .01 level.

Discussion

Although there were no significant differences in reading achievement over the four stages using this criterion, the differences between stage 2 and each of stages 4 and 5 were significant at the .05 level for the comprehension scores. Thus the children in the lower end of the scale were significantly different from their peers at the uppermost stages (4 and 5). This generalization held true when the study was reduced to three stages. Those children in stage 2 scored significantly different from their classmates in either stage 3-4 or stage 5 ($p < .05$).

Hypothesis 7

Statement: There is no significant correlation between the placement of children into stages as determined by the base, ceiling, and 12 per cent criteria and their teachers' ratings of these children as achievers in reading.

This hypothesis was rejected as the correlation between the placement into stages using the base passages and their teachers' ratings was significant at the .01 level. This hypothesis was also rejected using the ceiling and 12 per cent passages as the correlation between the placement into stages on this basis of these two criteria and their teachers' ratings were both significant at the .05 level.

Discussion

The findings on teachers' ratings corroborate the findings of Kermonian (1962), Henig (1949), Kottemeyer (1947) that grade one teachers are perceptive in terms of assessing their childrens' reading achievement. Regardless of whether the base, ceiling or 12 per cent criterion was used to assign children to stages the teachers' ratings of their children were highly correlated with the placement into stages on the basis of oral reading miscues. Conversely, since the correlation between teachers' ratings and miscue placement is significant, then the placement into stages on the basis of the miscue criterion must be equally valid. The advantage the miscue criterion has over the teacher ratings is that it can be carried out by a new teacher who does not have months of experience in interacting with the child. The miscue data also provides valuable diagnostic information regarding the child's performance as he reads. The miscue analysis also may prove more efficient when combined with the teachers' ratings in that the teacher may prefer only to analyse in detail the miscues of those children whom he rates at the lower end of the scale.

III. LIMITATIONS OF THE STUDY

In addition to those limitations already outlined in Chapter I, the following factors became apparent during the testing, which may tend to limit the applicability of the findings.

1. There were no children in stage 1 as identified by Biemiller (1969) and described in Chapter III. This may mean that this sample is atypical but more likely was due to the fact that the study was completed

in April of the grade one year when children had passed beyond this stage. During the pilot study in January, there were children identified who were candidates for this category.

2. Although the teachers in this study used primarily a phonic approach or a combination of a sight-word and phonic approach, specific data regarding the teaching strategies and their relationship to the number and type of miscues made by the children was not analyzed.

IV. SUGGESTIONS FOR FURTHER RESEARCH

This study has suggested that it is possible to place beginning readers into stages, during one testing session, based on their performance using base, ceiling and 12 per cent criteria.

A study similar to this one could be conducted earlier in the school year before children have advanced too far in their reading achievement levels. An analysis of their performance on a reading achievement and a comprehension task would provide further insight into the reading process of beginning readers.

The application of the miscue criteria to the oral reading errors of readers with severe reading difficulties at other grade levels would be most interesting. It is possible that such readers are "stuck" in a developmental stage of the reading process. This could happen particularly with stage 2, where children must change their strategies if they are to move to the next stage.

A case study approach of children in various stages might

focus the teachers' attention on specific areas which need further development before a child is ready to become proficient in reading. This type of study might reveal deficiencies in the areas of visual or auditory memory, perceptual difficulties or possibly left-right discrimination problems which require further development. As the child brings his knowledge of language to the printed page, such a study may hypothesize that the environmental background is critical in determining the language facility that a child brings to school, and this factor or a combination of many factors may determine the child's readiness to move through the stages of beginning reading.

A study might be conducted involving periodic retesting to determine the length of time that a child remains in a particular stage. Biemiller (1969) noted that the sooner a child reached stage 2, the non-response stage, and proceeded to the post non-response stage, the better reader the individual was at the end of the year.

Further research into the relationship between specific teaching strategies and their effect on the number and type of miscues a child makes when reading orally is needed. Barr (1972) in an attempt to deal with this problem proved inconclusively that specific strategies had a differential effect on the word recognition errors of beginning readers.

Investigations into teachers' ratings of their pupils' levels of reading achievement earlier in the school year would update the present knowledge in this area. Teachers' ratings of students at different grade levels would extend research into this seldom discussed area of teacher perception of individual achievement. It

may be noted that two of the three studies on teachers' perceptions of reading achievement reported in this study, were completed twenty-five years ago.

It is suggested that on the basis of the findings of this study, the ceiling criterion be used to assess childrens' oral reading miscues. It may be advisable to conflate stages 3 and 4 since no differences ever existed between these stages in the findings of this study.

V. IMPLICATIONS

1. The findings indicate that an analysis of the oral reading miscues of children provides important diagnostic information for the grouping of students for effective instruction. Though not all of the stages appeared to be significantly different from each other, the means of the different stages generally increased over stage levels. To maximize the difference between the stages, it is recommended that educators use the ceiling criterion as outlined in Chapter III in analysing oral reading miscues.

2. An analysis of the oral reading miscues (based on the ceiling criterion), coupled with the teachers' ratings of these children as achievers in reading, should prove very effective in pinpointing stages in reading achievement reached by the various pupils.

3. Since it is possible to place children into stages on the basis of the number and types of miscues they make when reading orally the challenge for teachers would be that of moving these children through the various stages of beginning reading. Biemiller (1969)

pointed out that the children in the non-response stage, stage 2 in this study, were over-attending to the graphic features of the word to the extent that they knew the word was unknown to them, yet they were unable to use preceding context to aid word identification. A child in stage 2 must be encouraged to retain his focus on the graphic display, yet he must begin to use the syntactic and semantic cues of his language. Since a child's knowledge of language is crucial in beginning reading, three ways are suggested which may help improve his use of this knowledge in becoming a more efficient reader.

a) The "cloze" technique in which every nth word or a selected word (e.g. a noun) is deleted from a paragraph may be used. As it is evident from research that children beginning to read use phrases as a unit of context, the use of the "cloze" technique to delete words at the pre and post-phrase levels would be beneficial for children experiencing difficulty in using contextual language cues.

e.g. A boy had a _____.
He wanted to feed _____ dog.
He put some _____ outside,
but the dog _____ not come.
Another dog _____ along
and took the _____.
Then the boys' dog _____ home
but it was _____ late.

Such a paragraph would be presented on a sentence by sentence basis. The children would be asked to supply words which would fit into the

blank. Once several responses had been noted on the board, each one would be discussed with the children and responses which were not consistent with the rest of the sentence in terms of semantic and syntactic acceptability, would be eliminated.

The next sentence in the paragraph would be presented and the same procedure followed. The discussion about each response would attempt to make the child aware that he must use both preceding and succeeding context when reading. Once all the sentences have been discussed, the teacher would ask some of the children to read the story out loud in order to develop fluency for the passage as a unit.

b) A second suggestion to further develop knowledge about language may involve the discussion with the child regarding his oral reading miscues.

E.g. The horse wandered in the middle of the road (Text version)

The house wandered in the middle of the road (Student version)

Examples similar to this may be used to help the child understand that the word he produced (miscue) is inconsistent with the rest of the sentence. Research has shown that the higher readers would, in all likelihood, correct such a miscue, because their knowledge of language from the succeeding context would tend to make them aware of the inconsistency. The lower readers, with insufficient knowledge of language, would continue to read despite the error. In order to increase the low readers' awareness of his miscue and to help prevent similar occurrences, the graphic features (letters and sequence) of the words "horse" and "house" may be discussed with

them through probing questions. The sentence could then be placed on the board and the two words put in a bracket. The children could be asked to print in their exercise books the word which would best complete the sentence.

3. Another way to develop oral and written language fluency involves a program of the following nature. The teacher chooses a story within the common experience of the children in the group. One example might be "A day at the zoo." The topic would be discussed with the class in an attempt to get the child thinking about the story before he begins to read. By answering questions and listening to his classmates' experience with the topic the child's lack of experience would be minimized. This is important since the final goal is to have the child become involved in appreciating the fluency of written language rather than trying to cope with the content of the story. As the children discuss the topic, some of the key words they use would be written on the board in an attempt to highlight them for possible recognition when the story is later read. Once the topic has been discussed thoroughly, the teacher and the children read the story aloud. Thus the teacher provides a model for patterning the various phrases and other language segments. The teacher may then ask children individually or as a group, to read sentences or paragraphs to expose them to the flow of words in written language. Should the teacher feel any specific language patterns need discussing, she would isolate them and discuss them separately, after the story has been read.

4. Because children were eliminated from this study as a result of hearing or visual deficiencies, or as a result of a lack

of data on cumulative records, it is recommended that testing for sensory difficulties be completed early in the year. If children transfer from school to school during the year, up-to-date cumulative records are essential to help the teacher know as much about the child as is possible.

CONCLUDING STATEMENT

This study has indicated that it is possible to place beginning readers into stages on the basis of their oral reading miscues in a single testing session. Such information can be a valuable diagnostic tool for teachers to assist them in the placement of their children into groups for instructional purposes. Once a child's stage has been determined, the challenge for the teacher is to move the child on to the next stage by developing strategies that will help the child in reaching a higher reading achievement level.

Further research into the use of this stage-placement criteria is needed for students earlier in the school year and for severely retarded readers at different grade levels, whose oral reading miscues may indicate that they are still performing at the acquisition stage of reading.

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APPENDIX A

STAGES AS DETERMINED BY MISCUE CRITERIA AND TEACHERS' RATINGS BASED ON THEIR TEACHING EXPERIENCE

TABLE 41

COMPARISON BETWEEN PERCENTAGE AND NUMBER OF STUDENTS PER STAGE AS DETERMINED BY MISCUE CRITERIA AND RATING OF STUDENTS BY TEACHERS WITH LESS THAN TEN OR TEN OR MORE YEARS OF EXPERIENCE

PASSAGES

	BASE					CEILING					12 PER CENT				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
MISCUE CRITERIA PLACEMENT	0	45 % 5	18 % 2	18 % 2	18 % 2	0	33 % 4	25 % 3	18 % 2	25 % 3	0	33 % 4	25 % 3	18 % 2	25 % 3
TEACHER RATING TEN OR MORE YEARS	8.2% 1	16.4% 2	49.2% 6	8.2% 1	8.2% 1	8.2% 1	16.4% 2	49.2% 6	16.4% 2	8.2% 1	8.2% 1	16.4% 2	49.2% 6	16.4% 2	8.2% 1
MISCUE CRITERIA PLACEMENT	0 % 0	21 % 6	10.5% 3	14 % 4	53 % 15	0 % 0	28 % 8	14 % 4	32 % 9	25 % 7	0 % 0	28 % 8	21 % 6	25 % 7	25 % 7
TEACHER RATING LESS THAN TEN YEARS	0 % 0	14 % 4	28 % 8	28 % 8	28 % 8	0 % 0	14 % 4	28 % 8	28 % 8	28 % 8	0 % 0	14 % 4	28 % 8	28 % 8	28 % 8

TABLE 42

COMPARISONS BETWEEN THOSE SUBJECTS PER STAGE AS DETERMINED BY MISCUE CRITERIA AND TEACHER'S RATING OF STUDENTS BASED ON TEN OR MORE YEARS OF EXPERIENCE

PASSAGES

	BASE					CEILING					12 PER CENT				
Stage	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
MISCUE CRITERIA		20 31 32 34 36	09 10	07 30	06 16		31 32 34 36	02 20 30	06 07	09 10 16		31 32 34 36	02 20 30	06 07	09 10 16
TEACHER'S RATING MORE THAN TEN YEARS	34	30 32	09 10 16 20 31 36	07	06	34	30 32	09 10 16 20 31 36	02 07	06	34	30 32	09 10 16 20 31 36	07 02	06
	N=11					N=12					N=12				

TABLE 43

COMPARISONS BETWEEN THOSE SUBJECTS PER STAGE AS DETERMINED BY MISCUE CRITERIA AND TEACHER'S RATING OF STUDENTS BASED ON LESS THAN TEN YEARS EXPERIENCE

PASSAGES

	BASE					CEILING					12 PER CENT				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
MISCUE CRITERIA		15 21 25 33 39 40	27 29 37	24 26 28 35	01 03 04 05 08 11 12 13 14 17 18 19 22 23 38		14 15 21 25 27 33 37 39 40	04 22 23 28	01 11 12 18 24 26 35 38	03 05 08 13 17 19 29		14 15 25 27 33 37 39 40	04 12 21 22 23 35	01 11 18 24 26 28 38	03 05 08 13 17 19 29
TEACHER'S RATING LESS THAN TEN YEARS		27 28 37 40	15 19 21 23 26 29 39 35	03 04 13 17 24 25 33 38	01 15 08 11 12 14 18 22		27 28 37 40	15 19 21 23 26 29 35 39	03 04 13 17 24 25 33 38	01 05 08 11 12 14 18 22		27 28 37 40	15 19 21 23 26 29 35 39	03 04 13 17 24 25 33 38	01 05 08 11 12 14 18 22